MEMORANDUM

SUBJECT: VPDES Permit No. VA0061590, Town of Culpeper WPCF; VPDES Modification; Culpeper County

TO: VPDES Permit No. VA0061590 Permit File

FROM: Joan C. Crowther

DATE: October 18, 2011, Updated December 6, 2011

By their April 7, 2011 email, the Town of Culpeper requested a major permit modification for Town of Culpeper Treatment Plant's VPDES Permit No. VA0061590. This memorandum appends the 2010 Fact Sheet (Attachment 1) supporting the VPDES Permit effective March 10, 2010. The information contained in this memo replaces the information in the original 2010 fact sheet. The Town requested the increase of the Total Nitrogen (TN) annual average concentration effluent limitation from 3.0 mg/L to 4.0 mg/L.

By letter dated August 24, 2010, from Mr. David E. Evans of McGuire Woods, DEQ was notified that the Culpeper County Board of Supervisors and the Culpeper Town Council unanimously approved the Nutrient Allocation Consolidation Agreement on August 17, 2010 (Attachment 2). This Agreement transferred and consolidated the Mountain Run Plant Allocations (TN and TP) with the Town of Culpeper's Allocations. This results in the increase of the Total Nitrogen annual average effluent concentration from 3.0 mg/L to 4.0 mg/L and allows the Total Phosphorus annual average effluent concentration to be 0.30 mg/L for the Town of Culpeper Wastewater Treatment Plant's VPDES Permit No. VA0061590. The Town of Culpeper's Virginia Water Quality Improvement Fund, Point Source Grant and Operation and Maintenance Agreement (Grant # 440-S-07-18) was modified to state that the Total Nitrogen annual concentration effluent limitation for the Town of Culpeper Wastewater Treatment Plant would be 4.0 mg/L (Attachment 3). Based on these two documents, the Town of Culpeper Wastewater Treatment Plant's VPDES Permit No. VA0061590 is being modified to reflect this Total Nitrogen annual concentration effluent limitation change.

Documentation supporting the Total Nitrogen and Total Phosphorus Annual Concentration Averages:

1) The Watershed General Permit authorizes the Town of Culpeper WPCF to discharge 54,820 pounds per year (lbs/yr) of the nutrient total nitrogen and 4,112 lbs/yr of the nutrient total phosphorus. The Watershed General Permit incorporates the nutrient allocations for TN and TP in such amounts as set forth in the State Water Control Board's Water Quality Management Planning Regulation, 9 VAC 25-720-70.C, which are derived for this facility based on a design flow capacity of 4.5 MGD.

2) The Watershed General Permit authorizes Mountain Run Wastewater Treatment Plant to discharge 18,273 lbs/yr of the nutrient total nitrogen and 1,371 lbs/yr of the nutrient total phosphorus. The Watershed General Permit incorporates the nutrient allocations for TN and TP in such amounts as set forth in the State Water Control Board's Water Quality Management Planning Regulation, 9 VAC 25-720-70.C, which are derived for this facility based on a design flow capacity of 1.5 MGD.

3) Per the Nutrient Allocation Consolidation Agreement between Town of Culpeper and the County of Culpeper dated August 17, 2011, the Mountain Run Wastewater Treatment Plant's Allocation (TN and TP) were transferred to and consolidated with Town of Culpeper's Allocation. DEQ modified the General Permit Registration to reflect the transfer of wasteload allocation on May 10, 2011.

Town of Culpeper TN loading = 54,820 lbs/yr
Town of Culpeper TP loading = 4,112 lbs/yr

Mountain Run WWTP TN loading = 18,273 lbs/yr
Mountain Run WWRP TP loading = 1,371 lbs/yr

Nutrient Annual Concentration Average = Facility's TN or TP Allocation (lbs/yr) ÷ 365 days per year ÷ 8.3438 (conversion factor) ÷ Facility Design Flow (MGD)

TN Annual Concentration Average (mg/L) = 54,820 lbs/yr + 18,273 lbs/yr ÷ 365 ÷ 8.3438 ÷ 6.0 MGD
= 4.0 mg/L

TP Annual Concentration Average (mg/L) = 4,112 lbs/yr + 1,371 lbs/yr ÷ 365 ÷ 8.3438 ÷ 6.0 MGD
= 0.30 mg/L

Since the VPDES Permit No. VA0061590 is being modified, staff is taking this opportunity to make additional modifications to the permit that are either no longer effective or typographical errors. This permit modification implements the following changes to the VPDES permit:

1. Removes the Part I.A Effluent Limitations for the 4.0 MGD design flow (Page 1 of 14). The Certificate To Operate the 6.0 MGD design flow facility was issued April 22, 2010 (Attachment 4).

2. Increases the Total Nitrogen (TN) annual average concentration effluent limitations from 3.0 mg/L to 4.0 mg/L for the 6.0 MGD design flow. This is accomplished by updating the effluent limitations for TN on the 6.0 MGD effluent limitation page of the permit.

3. Removed the Total Phosphorus annual average concentration effluent footnote that required the permittee to design the 6.0 MGD facility to meet a 0.22 mg/L.

4. Corrects the typographical error contained in Part I.F.9.b. Special Condition - Instream Monitoring frequency so that it is consistent with the effluent dissolved copper, dissolved zinc, and Total Hardness monitoring frequency. The Instream Monitoring was decreased from quarterly monitoring to once every four (4) months.

5. Removes Part I.F.10 – 11 Special Conditions for Groundwater Monitoring. Pursuant to Part I.F.11, the groundwater monitoring could be terminated if so requested by the permittee and that the groundwater showed no groundwater contamination. The groundwater monitoring was terminated by DEQ on August 24, 2011.

6. Revises the numbering sequence of the permit special conditions after removing the conditions noted above from the permit.

7. Corrected typographical error (namely, removes the extra "the" in Part I.D.1.f. sentence).

8. Updated Part II,A.4. that requires the permittee to analyze samples required by this permit in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

The 2010 Fact Sheet information is amended as follows:

1. Section 19(a) – Removal of the 4.0 MGD Effluent Limitations/Monitoring Requirements Table.

2. Section 19(b) – Removal of the "$" footnote for the Total Phosphorus Calendar Year effluent limitation.

3. Section 21(l-m) - Removal of the Groundwater Monitoring Plan and Corrective Action Plan Special Conditions supporting document.

4. Section 23 – Changes to the Permit from the Previously Issued Permit – See previous paragraph.

5. Section 25 – Public Notice Information:

   First Public Notice Date: November 5, 2011 Second Public Notice Date: November 12, 2011

   Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3925, joan.crowther@deq.virginia.gov. See Attachment 5 for a copy of the public notice document.

   Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal

statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

6. Section 27 - Additional Comments:

Previous Board Action(s): On December 9, 2010, the Town of Culpeper was issued an Order by Consent for the Town of Culpeper WPCF. This Order addressed effluent violations for January 2009; namely, TKN (weekly maximum concentration) and Ammonia (monthly average and weekly maximum concentrations); pump stations overflows; namely, Pump Station No. 1 on June 26, 2009 and Pump Station No. 4 on August 4, 2009; and required the Town to repair the liner in equalization lagoon cell number 1 of the by July 15, 2011. The Certificate To Operate the equalization lagoon was issued on April 19, 2011. The Order by Consent was terminated by the State Water Control Board on May 31, 2011.

Staff Comments: During the final review of the permit package, one additional typographical error was noted on VPDES Permit No. VA0061590, Page 1 of 12, Part I,A.1 regarding the Total Nitrogen effluent limitation. The sample type was listed as "24H-C" when it should have been "Calculated". This typographical error was corrected.

Public Comment: One public comment was received during the public comment period of November 5, 2001 through December 5, 2011. On December 5, 2011, an email was received from Mr. Greg Wichelns, District Manager of the Culpeper Soil and Water Conservation, relaying questions/comments on behalf of Ms. Laura Campbell, a Culpeper District Director and a downstream property owner. Only one of the three questions/concerns pertained to the permit modification, namely Comment no. 3, "It was unclear to the commentor if the Greens Corner WWTP (temporary?) was included in the consolidation. Please clarity this." In accordance with the Nutrient Allocation Consolidation Agreement, only the nutrient allocations associated with the Mountain Run WWTP were transferred to the Town of Culpeper WPCF. Greens Corner WWTP nutrient allocations were not involved in this agreement.

Although the two other questions/concerns were not subject to public comment, staff did respond to them. They were as follows:

1) "The commentor is concerned about the increase flow from the plant adding to channel instability during higher or bankfull flow events. Has any evaluation of this occurred?

When a discharge is requested into state waters, the stream channel is taken into consideration during the stream modeling process. A description of the stream characteristics are incorporated into the stream model along with the 7Q10 stream flow and wastewater treatment plant's existing and future design flows. The stream model determines the appropriate effluent limitations to ensure water quality standards are maintained. However, there is no analysis performed to determine stream bank stability.

2) "The commentor questioned the *E.coli* limit currently (?) in place for the plant. It appears that it was amended earlier to a level equal to the surface water quality standard for *E.coli*. Is this accurate? How does this interact with any possible future delisting efforts (303d) for Mountain Run?

During the 2010 Permit Reissuance (effective date March 10, 2010), the Town asked that the *E. coli* geometric mean monthly average limit be raised from 39 n/100mL to 126 n/100mL. The Mountain Run TMDL approved in 2001 and modified in 2009 established an *E.coli* wasteload allocation for the Town of Culpeper WPCF of 3.23E+12 cfu/year

which is equivalent to 39 n/100mL monthly average geometric mean effluent limit at their permitted design flow of 6.0 MGD. The Town's request was granted by incorporating a monthly average geometric mean effluent limitation of 126 n/100mL into the 2010 permit reissuance. However, the permit also contains an *E.coli* 12- month maximum load of 3.23E+12 cfu/yr. to comply with the wasteload allocation contained in the approved TMDL. Since this wasteload allocation has been designated for the Town's wastewater treatment plant in the TMDL, any future 303(d) delisting efforts for Mountain Run will not be hampered.

EPA Checklist: The checklist can be found in Attachment 6.

7. List of Attachments:
   Attachment 1 – 2010 Permit Fact Sheet
   Attachment 2 – Culpeper Nutrient Allocation Consolidation Agreement and transmittal letter dated August 24, 2010
   Attachment 3 – Virginia Water Quality Improvement Fund, Point Source Grant and Operation and Maintenance Agreement, Grant # 440-S-07-18
   Attachment 4 – Certificate To Operate (6.0 MGD) dated April 22, 2010
   Attachment 5 – Permit Modification Public Notice
   Attachment 6 – EPA Checklist

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Major, Municipal permit. The discharge results from the operation of a 4.0 MGD wastewater treatment plant with a planned BNR expansion to 6.0 MGD. This permit action consists of updating the WQS and updating boilerplate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

1. Facility Name and Mailing Address: Town of Culpeper WPCF, 400 South Main St, Culpeper, VA 22701 — SIC Code: 4952 WWTP

   Facility Location: 15108 Service Lane, Culpeper, VA 22701 — County: Culpeper

   Facility Contact Name: James Hust — Telephone Number: 540-825-1199

2. Permit No.: VA0061590 — Expiration Date of previous permit: 9/30/2009

   Other VPDES Permits associated with this facility: VAR051441, VAN020024

   Other Permits associated with this facility: Air PSD #41019

   E2/E3/E4 Status: NA

3. Owner Name: Town of Culpeper

   Owner Contact/Title: Jeff Muzzy, Town Manager — Telephone Number: 540-829-8251

4. Application Complete Date: 3/30/09

   Permit Drafted By: Alison Thompson — Date Drafted: September 9, 2009

   Draft Permit Reviewed By: Joan Crowther — Date Reviewed: September 18, 2009

   Public Comment Period: Start Date: January 8, 2010 — End Date: February 8, 2010

5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination

Receiving Stream Name:	Mountain Run		
Drainage Area at Outfall:	12.3 sq.mi.	River Mile:	MTN19.86
Stream Basin:	Rappahannock	Subbasin:	None
Section:	4	Stream Class:	III
Special Standards:	None	Waterbody ID:	VAN-E09R
7Q10 Low Flow:	0.10 MGD	7Q10 High Flow:	4.17 MGD
1Q10 Low Flow:	0.07 MGD	1Q10 High Flow:	2.9 MGD
Harmonic Mean Flow:	2.0 MGD	30Q5 Flow:	0.58 MGD
303(d) Listed:	Yes	30Q10 Flow:	0.0 MGD
TMDL Approved*:	Yes	Date TMDL Approved:	April 27, 2001

* The TMDL is currently under modification to update the WLAs given to the point sources.

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

- ✓ State Water Control Law
- ✓ Clean Water Act
- ✓ VPDES Permit Regulation
- ✓ EPA NPDES Regulation
- ___ EPA Guidelines
- ✓ Water Quality Standards
- ___ Other

7. Licensed Operator Requirements: Class I

8. Reliability Class: Class I

9. Permit Characterization:

___	Private	___	Effluent Limited	___	Possible Interstate Effect
___	Federal	✓	Water Quality Limited	___	Compliance Schedule Required
___	State	✓	Toxics Monitoring Program Required	___	Interim Limits in Permit
✓	POTW	✓	Pretreatment Program Required	___	Interim Limits in Other Document
✓	TMDL				

10. **Wastewater Sources and Treatment Description:**

Wastewater from the collection system either flows via gravity or is pumped by force main to the larger of two influent pump stations. The larger influent pump station has 4 pumps (2 variable speed and 2 fixed speed) that can each pump 6 MGD. There is a smaller influent pump station that pumps directly to the headworks building with 2 variable speed pumps which can pump a maximum of 1000 gpm; the only flow contributions to this influent pump station are the Community College and the Library of Congress.

The headworks building contains two centerflow bar screens (one 6 MGD and one 12 MGD) and a vortex grit removal chamber. The flow is then split through 2 parshall flumes. The flow is then measured, and sent to the 2 primary clarifiers.

Wastewater leaving the headworks building flows to the two primary clarifiers and then to the two BNR tanks with diffused aeration, followed by two secondary clarifiers. Effluent from the primaries flows to the Equalization Pump Station that will allow flow the go to the BNR tanks or can pump portions of the flow to the 9 MGD equalization basin. The BNR tanks have the capability for methanol or alum addition, but the facility is not utilizing any chemicals at this time. Secondary clarifier effluent is pumped by the intermediate pump station to the equalization basin at the advanced waste treatment portion of the plant. Wastewater from the basin then flows through the flash mixer where it is mixed with Alum, and then into the 3 flocculation basins followed by tertiary clarifiers. There are 6 single media gravity filters; carbon source addition is also available at this point. Filter effluent is disinfected with UV disinfection as of August 5, 2009. The facility installed 3 UV channels each with 6 banks of 8 bulbs per bank. Flow is post-aerated and then metered before being discharged at Outfall 001 into Mountain Run.

The final effluent composite is collected after UV disinfection. The pH and DO samples are collected at the bottom of the step aeration.

The facility received a CTO for the 4.0 MGD flow tier on June 12, 2008. The facility is currently under construction to expand the flow to 6.0 MGD with completion of construction expected in January 2010.

See the permit application for a facility schematic/diagram.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Design Flow	Outfall Latitude and Longitude
001	Domestic and Commercial	See Item 10 above.	4.0 MGD	**38° 27' 56"** N **77° 58' 08"** W
See Attachment 2 for (Culpeper East, DEQ #184B) the discharge location map.				

11. **Sludge Treatment and Disposal Methods:**

There are two sludge sources to two anaerobic digesters operated in series. Primary sludge from the primary clarifiers flows through a gravity thickener. Thickened sludge is pumped into the primary digester. Sludge from the secondary clarifiers flows to the gravity belt thickener where polymer is added and the sludge is thickened to 5% solids and pumped to the primary Digester. Sludge is withdrawn from the secondary digester and emulsion polymer is added and centrifuged. The dewatered sludge falls into truck and stored in 2 sheds until it can be land applied by a contract hauler on approved fields. Alternately, sludge may disposed of in a permitted landfill.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

TABLE 2	
VAG110101	Colonial Concrete Culpeper Plant discharge to Mountain Run, UT.
VA0085723	Culpeper Petroleum Cooperative discharge to Mountain Run, UT.
3-MTN028.68	DEQ Ambient Water Quality Monitoring Station at the spillway of Mountain Run Lake, 8.82 miles upstream from the Town of Culpeper WPCF discharge.
3-MTN027.08	DEQ Ambient Water Quality Monitoring Station at the Route 641 Bridge on Mountain Run, 7.22 miles upstream from the Town of Culpeper WPCF discharge.
3-MTN025.17	DEQ Ambient Water Quality Monitoring Station at Lake Pelham (the Town's drinking water reservoir), 5.31 miles upstream from the Town of Culpeper WPCF discharge.
VA0092002	Greens Corner WWTP discharge to Mountain Run, 1.89 miles downstream.
VA0090212	Mountain Run WWTP proposed discharge to Mountain Run, 7.04 miles downstream.
VAG840107	Luck Stone Culpeper Quarry discharge to Mountain Run and Potato Run, UT.
3-MTN003.31	DEQ Ambient Water Quality Monitoring Station at the Route 672 Bridge on Mountain Run, 16.55 miles downstream from the Town of Culpeper WPCF discharge.
3-MTN000.59	DEQ Ambient Water Quality Monitoring Station at the Route 620 Bridge on Mountain Run, 19.27 miles downstream from the Town of Culpeper WPCF discharge.

13. Material Storage:

TABLE 3 – Material Storage

Material Storage	Volume Stored	Location	Comments
Degreaser	1 - 55 gallon drum	Influent Pump Station	
Sodium Hypochlorite	300 gallon tote	Headworks	No longer in use. Tank removed.
Soda Ash	100 - 50 lb bags	Control Building	Likely to be relocated to BNR tanks.
Sodium Bicarbonate	100 - 50 lb bags	Maintenance Building	Anaerobic Digester pH adjustment.
FC REL Defoamer	3 - 55 gallon drums	Maintenance Building	Anaerobic Digester foam control.
Spec 1420 Polymer	3 - 300 gallon totes	Maintenance Building	Sludge dewatering - centrifuge.
Polymer	None at this time	Gravity Belt Thickener	Not yet in use. Secondary sludge dewatering.
Aluminum Sulfate	2 - 5000 gallon tanks	Control Building	Sludge settling.
Methanol or similar product	1 - 8920 gallon tank	Methanol Building	Not yet in use. Denitrification in deep bed filters.
Chlorine Gas	4 - 1 ton cylinders	Control Building	To be discontinued when UV disinfection is online.
Sulfur Dioxide Gas	3 - 1 ton cyliners	Control Building	To be discontinued when UV disinfection is online.
FC 8083 Defoamer	1 - 55 gallon drum	Control Building	Plant effluent defoamer.
Hypochlorite Tablets	5 - 25 lb buckets	Control Building	Chlorine addition to NPW system (not backwash).
#2 Diesel Fuel	3000 gallon tank	Control Building	Double-walled AST with sensor in outer tank.
#2 Diesel Fuel	2500 gallon tank	Maintenance Building	Double-walled AST with sensor in outer tank.

#2 Diesel Fuel	1000 gallon tank	Blower Building	Double-walled AST with sensor in outer tank.
#2 Diesel Fuel	400 gallon tank	McDevitt Pump Station	Double-walled AST with sensor in outer tank.
#2 Diesel Fuel	3000 gallon tank	Influent Pump Station	Double-walled AST with sensor in outer tank.
#2 Diesel Fuel	5000 gallon tank	Main Plant Generator	Double-walled AST with sensor in outer tank.

14. Site Inspection:

A full technical and laboratory inspection was performed by DEQ – Water Compliance on December 4, 2007. The summary of the technical inspection is found in Attachment 3. Alison Thompson and Wilamena Harback from DEQ performed a site and stream inspection on August 19, 2009. The facility description in Section 10 reflects the current conditions at the facility.

Mountain Run at the point of discharge has a defined stream channel of approximately 25 feet wide with a depth of 6 -12 inches on the date of the inspection. The bottom is a mixture of smaller rocks, sand, and silt. There was some attached algal growth right in the vicinity of the discharge. Approximately 50 feet from the discharge, there was a shallow pool with small fish noted. No algal growth or sludge deposits were noted downstream of the discharge.

15. Receiving Stream Water Quality and Water Quality Standards:

a) Ambient Water Quality Data

The Town of Culpeper WPCF discharges into Mountain Run at Assessment Unit VAN-E09R_MTN04A04. This segment of Mountain Run extends from the outlet of Lake Pelham, downstream until the Route 15/29 Bridge Crossing (approximately 4.56 rivermiles). The following is a monitoring summary for Segment VAN-E09R_MTN04A04 as taken from the 2008 Integrated Assessment:

> Class III, Section 4 - DEQ fish tissue/sediment station 3-MTN022.21, at Fauquier Road, and ambient monitoring station 3-MTN022.49, at Route 522.
>
> The aquatic life, fish consumption, recreation, and wildlife uses are considered fully supporting. However, the consensus based probable effects concentration (PEC) sediment screening values for the following parameters were exceeded in sediment samples collected in 2006; total PAHs (22,800 ppb, dry weight), anthracene (845 ppb, dry weight), benz(a) anthracene (1,050 ppb, dry weight), phenanthrene (1,170 ppb, dry weight), chrysene (1,290 ppb, dry weight), naphthalene (561 ppb, dry weight), pyrene (1,520 ppb, dry weight), benzo(a) pyrene (1,450 ppb, dry weight), fluorene (536 ppb, dry weight), and fluoranthene (2,230 ppb, dry weight) . These are all noted as observed effects for the aquatic life use.

The TMDL impairments are summarized in Fact Sheet Section 26. The full Planning Statement is found in Attachment 4.

Significant portions of the Chesapeake Bay and its tributaries are also listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2008 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment.

In response, the Virginia General Assembly amended the State Water Control Law in 2005 to include the *Chesapeake Bay Watershed Nutrient Credit Exchange Program.* This statute set forth total nitrogen and total phosphorus discharge restrictions within the bay watershed. Concurrently, the State Water Control Board adopted new water quality criteria for the Chesapeake Bay and its tidal tributaries. These actions necessitate the evaluation and the inclusion of nitrogen and phosphorus limits on discharges within the bay watershed.

b) Receiving Stream Water Quality Criteria

Part IX of 9 VAC 25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Mountain Run, is located within Section 4 of the Rappahannock River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 5 details other water quality criteria applicable to the receiving stream.

Ammonia:
The freshwater aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream. During the previous reissuance, ambient monitoring data collected at 3-MTN003.31 (January 2001 – November 2003) downstream of the Town's discharge were evaluated for pH and temperature.

During the 2006 permit modification, newer ambient monitoring data for the period of July 2004 – June 2006 (Attachment 6) were used to recalculate the ammonia criteria. The newly calculated criteria were as follows:

Winter:	Acute 28 mg/l	Chronic 3.7 mg/l
Summer:	Acute 28 mg/l	Chronic 2.7 mg/l

The recalculated criteria are the same as those for Mountain Run in the vicinity of Culpeper County's Greens Corner WWTP and Mountain Run WWTP. Due to the close proximity of the three facilities, staff believes that it is important that the criteria determinations in the three permits are consistent. With the 2009 reissuance, staff reviewed more recent ambient data, but due to budget restraints, monitoring has been curtailed at the station. The limited data collected during the past 3 years does not differ significantly; therefore, the pH and temperature values, and subsequent ammonia criteria shall be carried forward with this reissuance.

Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). The average hardness of the receiving stream is 66.6 mg/l based on ambient monitoring data collected (July 2004 – June 2006) from the downstream sampling location. The hardness-dependent metals criteria shown in Attachment 5 are based on this value.

Bacteria Criteria: The Virginia Water Quality Standards (9 VAC 25-260-170 B.) states sewage discharges shall be disinfected to achieve the following criteria:

1) *E. coli* bacteria per 100 ml of water shall not exceed the following:

	Geometric Mean[1]	Single Sample Maximum
Freshwater *E. coli* (N/100 ml)	126	235

[1]For two or more samples [taken during any calendar month].

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Mountain Run, is located within Section 4 of the Rappahannock Basin. This section has been designated with no special standards.

d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on September 1, 2009, for records to determine if there are threatened or endangered species in the vicinity of the discharge. No threatened or endangered species were identified. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect any threatened and endangered species that might be identified in the future near the discharge.

16. Antidegradation (9 VAC 25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on the fact that the stream is dominated by effluent from the Town's discharge during low flow periods. The 7Q10 flow is 0.1 MGD where as the current permitted design flow for the WPCF is 4.0 MGD and the facility is undergoing expansion to 6.0 MGD. Also, the effluent limits for the Town's WPCF are designed to meet and maintain the Water Quality Standards.

Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. Because the critical stream flows are very, very small in comparison to the flows from the WWTP, no dilution is used to derive the effluent limitations, and the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:
Effluent data obtained from the permit application and DMRs has been reviewed and determined to be suitable for evaluation. Effluent data were reviewed, and there have been a number of exceedances of the established limitations during the past year for Ammonia as Nitrogen, Total Residual Chlorine, and TKN.

The following pollutants require a wasteload allocation analysis: Ammonia as Nitrogen since this is a WWTP treating domestic sewage; and the application indicates that the following were detected in the effluent –

Antimony, Barium, Cadmium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Zinc, and Alpha Endosulfan.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o[Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for aquatic ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- C_s = Mean background concentration of parameter in the receiving stream.

Because the critical stream flows are very small in comparison to the flows from the WWTP, no dilution is used to derive the effluent limitations. As such, there is no mixing zone and the WLA is equal to the water quality criteria.

c) Effluent Limitations Toxic Pollutants, Outfall 001 –

9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9 VAC 25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia/TKN:

At the 4.0 and 6.0 MGD design flows, the TKN limit of 3.0 mg/L for summer ensures adequate protection of the ammonia criteria, and no ammonia limit is needed. However, ammonia limits are needed during winter as the TKN limit of 8.0 mg/L from the dissolved oxygen modeling is not stringent enough to protect the ammonia criteria during the winter months. Staff proposes to carry forward the existing winter ammonia limits at both the 4.0 and 6.0 MGD flow tiers. DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge. As such, an ammonia monthly average limit of 3.7 mg/L is needed in winter (December – May) at both flow tiers to protect the chronic water quality criteria (Attachment 7).

At the 4.0 MGD design flow, the existing TKN limit of 3.0 mg/L for summer is based on modeling conducted during October 1998, and is adequate to protect the DO criteria. The modeling was done for a 4.5 MGD design flow but it is staff's best professional judgment that the limits are appropriate for the lower design flow of 4.0 MGD (Attachment 8).

At the 6.0 MGD design flow, the TKN limit of 3.0 mg/L for summer is based on modeling conducted in August and September 2006 and is adequate to protect the DO criteria (Attachment 9).

The TKN weekly average limit will be 4.5 mg/L for summer is based on a multiplier of 1.5 times the monthly average.

2) Total Residual Chlorine:

Chlorine is no longer used for disinfection; therefore, there is no potential to exceed the WQS and limits are no longer necessary in this permit.

3) Metals:

The detectable concentrations for Antimony, Barium, Iron, Lead, and Nickel are well below the WLAs and there is no reasonable potential to exceed the applicable WQS; therefore, no limits are needed. Limit evaluations were done for Cadmium, Copper, Mercury, and Zinc (Attachment 7). Evaluations show that limits are needed for Copper and Zinc, but the facility is currently undergoing an extensive upgrade and expansion, and staff believes that the results are not representative of the performance of the newer plant. In lieu of limits, the permit shall require monitoring once every four months for dissolved copper, dissolved zinc, and total hardness once the CTO for the 6.0 MGD is issued.

4) Organics (Pesticides):

Alpha Endosulfan was detected in the effluent in the 2007 sample but not in the 2008 sample. Evaluation shows that a limit is needed, but the facility is currently undergoing an extensive upgrade and expansion, and staff believes that the detectable result is not representative of the performance of the newer plant. In lieu of limits, the permit shall require monitoring once every four months once the CTO for the 6.0 MGD is issued.

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), carbonaceous biochemical oxygen demand-5 day ($CBOD_5$), biochemical oxygen demand-5 day (BOD_5), total suspended solids (TSS), total kjeldahl nitrogen (TKN), and pH limitations are proposed.

4.0 MGD Design Flow:

Dissolved Oxygen, BOD_5, $CBOD_5$, and TKN limitations are based on stream modeling conducted in October 1998 (Attachment 8) and are set to meet the water quality criteria for DO in the receiving stream. Limits for the 4.0 MGD design flow are based on the model done for the 4.5 MGD flow tier that was added during the 2006 modification.

6.0 MGD Design Flow:

Dissolved Oxygen, BOD_5, $CBOD_5$, and TKN limitations for the 6.0 MGD flow are based on stream modeling conducted in August and September 2006 (Attachment 9) and are set to meet the water quality criteria for DO in the receiving stream. The model is the agency's Regional Water Quality Model for Free Flowing Streams Version 4.11.

Both models assume that Mountain Run is at 7Q10 flows during winter and summer periods and that discharge flows are at their maximum. While this scenario is relatively unlikely, it is a reasonable worst case scenario that assures the effluent from the Town's WPCP will not cause a violation of the DO criteria (5.0 mg/l) even under extreme conditions.

The results of the model show that the stringent limits already in place for the summer months are sufficient to protect the DO criteria even with the expanded flow of 6.0 MGD. However, during winter, a BOD_5 concentration limit of 12 mg/l will be required in order to safely protect the DO criteria in winter.

TSS limits are established to equal BOD_5 limits since the two pollutants are closely related in terms of treatment of domestic sewage. It is staff's practice to equate the Total Suspended Solids limits with the BOD_5/$CBOD_5$ limits.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9 VAC25-260-170 and the TMDL for Mountain Run which was originally approved in 2001 and was modified in 2009. This facility was given a WLA of 3.23E+12 cfu/year of *E. coli* bacteria in the modified TMDL. The permit incorporates the annual *E. coli* bacteria load from the TMDL; the load will be calculated on a rolling 12-month window to demonstrate compliance with the TMDL. The monthly geometric mean concentration is established at the water quality criterion of 126 cfu/100mL.

e) Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

VPDES Regulation 9 VAC 25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. There are three regulations that necessitate nutrient limitations:

- 9 VAC 25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* requires discharges with design flows of ≥0.04 mgd to treat for TN and TP to either BNR levels (TN = 8 mg/l; TP = 1.0 mg/l) or SOA levels (TN = 3.0 mg/l and TP = 0.3 mg/l).

- 9 VAC 25-720 – *Water Quality Management Plan Regulation* sets forth TN and TP maximum wasteload allocations for significant dischargers in the Chesapeake Bay watershed.

- 9 VAC 25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* became effective January 1, 2007. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit. This facility has coverage under this General Permit; the permit number is VAN020024.

Monitoring for Nitrates + Nitrites, Total Nitrogen, and Total Phosphorus are included in this permit. The monitoring is needed to protect the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies are set at the frequencies set forth in 9 VAC 25-820.

Annual average effluent limitations, as well as monthly and year to date calculations, for Total Nitrogen and Total Phosphorus are included in this individual permit.

For the 4.0 MGD design flow no nutrient concentration limits are required since this was the existing design flow for the facility.

At the 6.0 MGD flow tier, a concentration limit of 3.0 mg/L TN annual average is based on 9VAC40-70.A(1). A 0.30 mg/L annual average for TP was placed in the permit. This concentration is footnoted to note that the facility is to be designed to meet an annual average TP of 0.22 mg/L at design flow. The Town has stated in their offset plan that they plan to treat to 0.22 mg/L annual average TP to meet their TP load in 9 VAC 25-720. The TP load is based on a design flow of 4.5 MGD, so the facility will be required to meet the 0.22 mg/L annual average starting January 1 of the year following the year that average daily flows are 4.5 MGD or greater.

f) Annual Total Phosphorus and Total Nitrogen Loading Limits.

The permit for this facility was last reissued in 2004. At that time staff evaluated nutrient data from the WPCP in accordance with GM 04-2017. The results of that analysis yielded TN and TP interim annual loading limits that were placed in the permit. These limits were considered interim since it was known at the time that TN and TP wasteload allocations were soon to be incorporated into the Rappahannock Basin Water Quality Management Plan (9 VAC25-720).

The premise behind GM 04-2017 was to require facilities to remove nutrients to the maximum extent practicable based on the STP's operational and performance history.

During the 2006 modification staff realized that the data used to generate the nitrogen interim limits were not indicative of normal operations, as the facility has not been able to meet the loading limits as originally thought.

The facility was under a Consent Order for failure to meet effluent limits for TSS and ammonia as well as a few other parameters. One of the problems with the plant has been solids handling; the facility could not waste its solids sufficiently and this in turn affected treatment. Further, the flows to the facility increased as the Town underwent growth. For these reasons staff believed the interim limits for total nitrogen should be removed during the modification. The STP was not designed to remove nitrogen and the data and assumptions used to assess total nitrogen removal abilities and derive permit limits were shown to be inaccurate.

The total phosphorus interim loading limit will remain in effect until the WQMP TP loading limit becomes effective. The limit was converted during the modification to lb/yr (17,637 lbs/year).

Final TN and TP loading limits as prescribed by the Water Quality Management Plan, as well as the compliance schedule to meet the limits are now part of the Town's nutrient general permit which became effective on January 1, 2007. These loading limits will become effective January 1, 2011.

g) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Flow, BOD_5, $CBOD_5$, Total Suspended Solids, Ammonia as Nitrogen, Total Kjeldahl Nitrogen, *E. coli*, pH, Dissolved Oxygen, Whole Effluent Toxicity, Total Nitrogen, Total Phosphorus, and Total Phosphorus Annual Loading.

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and a conversion factor of 3.785.

The mass loading (lb/d) for TKN monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and a conversion factor of 8.3438.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

The VPDES Permit Regulation at 9 VAC 25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD/CBOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19a. Effluent Limitations/Monitoring Requirements – 4.0 MGD:
Design flow is 4.0 MGD.

Effective Dates: During the period beginning with the effective date of the permit and lasting until the issuance of a Certificate to Operate (CTO) for 6.0 MGD facility or the permit's expiration date, whichever occurs first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
BOD_5 (December – May)	3, 5	15 mg/L 230 kg/d	22 mg/L 330 kg/d	NA	NA	1/D	24H-C
$CBOD_5$ (June - November)	3, 5	8 mg/L 120 kg/d	12 mg/L 180 kg/d	NA	NA	1/D	24H-C
TSS (December – May)	2	15 mg/L 230 kg/d	22 mg/L 330 kg/d	NA	NA	1/D	24H-C
TSS (June – November)	2	8.0 mg/L 120 kg/d	12 mg/L 180 kg/d	NA	NA	1/D	24H-C
Ammonia, as N (December – May)	3	3.7 mg/L	4.5 mg/L	NA	NA	1/D	24H-C
TKN (June - November)	3, 5	3.0 mg/L 100 lb/d	4.5 mg/L 150 lb/d	NA	NA	1/D	24H-C
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
Dissolved Oxygen	3, 5	NA	NA	6.5 mg/L	NA	1/D	Grab
E. coli (Geometric Mean)	3, 6	126 n/100 mls	NA	NA	NA	1/D	Grab
E. coli – Rolling 12 Month Max Load	6	NA	NA	NA	3.23E+12	1/M	Calculated
Nitrate+Nitrite	3	NL mg/L	NA	NA	NA	1/W	24H-C
Total Nitrogen[b.]	3	NL mg/L	NA	NA	NA	1/W	Calculated
Total Phosphorus - Monthly [a.]	3	NL mg/L	NA	NA	NL lb/mo	1/W	24H-C
Total Phosphorus – Year to Date [a.]	3	NL mg/L	NA	NA	NL lb/yr	1/M	Calculated
Total Phosphorus - Calendar Year [a.]	3	NL mg/L	NA	NA	17,637 lb/yr	1/YR	Calculated
Whole Effluent Toxicity (*C. dubia*)	3	NA	NA	NA	1.5 TU_c	1/6M	24H-C

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model- Attachment 8
6. TMDL for Mountain Run

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
1/W = Once every week.
1/M = Once every month.
1/6M = Once every six months.
1/YR = Once per year.

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. See Section 20.a. for Nutrient Reporting Calculations.

b. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

19b. Effluent Limitations/Monitoring Requirements – 6.0 MGD:
Design flow is 6.0 MGD.
Effective Dates: During the period beginning with the issuance of a Certificate to Operate (CTO) for the 6.0 MGD facility and lasting until the permit's expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
BOD_5 (December – May)	3,5	12 mg/L 270 kg/d	18 mg/L 410 kg/d	NA	NA	1/D	24H-C
$CBOD_5$ (June - November)	3,5	8 mg/L 180 kg/d	12 mg/L 270 kg/d	NA	NA	1/D	24H-C
TSS (December – May)	2	12 mg/L 270 kg/d	18 mg/L 410 kg/d	NA	NA	1/D	24H-C
TSS (June – November)	2	8.0 mg/L 180 kg/d	12 mg/L 270 kg/d	NA	NA	1/D	24H-C
Ammonia, as N (December – May)	3	3.7 mg/L	4.5 mg/L	NA	NA	1/D	24H-C
TKN (June - November)	3, 5	3.0 mg/L 150 lb/d	4.5 mg/L 220 lb/d	NA	NA	1/D	24H-C
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
Dissolved Oxygen	3, 5	NA	NA	6.5 mg/L	NA	1/D	Grab
E. coli (Geometric Mean)	3, 6	126 n/100 mls	NA	NA	NA	1/D	Grab
E. coli – Rolling 12 Month Max Load	6	NA	NA	NA	3.23E+12	1/M	Calculated
Nitrate+Nitrite, as N	3, 7	NL mg/L	NA	NA	NA	1/W	24H-C
Total Nitrogen [a.]	3, 7	NL mg/L	NA	NA	NA	1/W	24H-C
Total Nitrogen – Year to Date [b.]	3, 7	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen - Calendar Year [b.]	3, 7	3.0 mg/L	NA	NA	NA	1/YR	Calculated
Total Phosphorus	3	NL mg/L	NA	NA	NA	1/W	24H-C
Total Phosphorus – Year to Date [b.]	3, 7	NL mg/L	NA	NA	NA	1/M	Calculated
Total Phosphorus - Calendar Year$ [b.]	3, 7	0.30 mg/L	NA	NA	NA	1/YR	Calculated
Dissolved Copper*	3	NL ug/L	NL ug/L	NA	NA	1/4M	Grab
Dissolved Zinc*	3	NL ug/L	NL ug/L	NA	NA	1/4M	Grab
Total Hardness*	3	NL mg/L	NL mg/L	NA	NA	1/4M	Grab
Alpha-Endosulfan*	3	NL ug/L	NL ug/L	NA	NA	1/4M	Grab
Whole Effluent Toxicity (*C. dubia*)	3	N/A	NA	NA	1.5 TU_c	1/3M	24H-C

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model- Attachment 9
6. TMDL for Mountain Run
7. 9 VAC 25-40 (Nutrient Regulation)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
1/W = Once every week.
1/M = Once every month.
1/3M = Once every three months.
1/4M = Once every four months.
1/YR = Once per year.

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

b. See Section 20.a. for Nutrient Reporting Calculations.

* The monitoring for these parameters shall commence with the monitoring period beginning January 1, 2011. The monitoring periods shall be January-April, May-August, and September-December. The results of the monitoring shall be submitted on the DMR on the 10th of the month following the end of the monitoring period.

$ The permittee shall design the 6.0 MGD facility to meet an annual average concentration of 0.22 mg/L at the design flow. The permittee shall

comply with a 0.22 mg/L Total Phosphorus annual average beginning January 1 of the calendar year immediately following the first year that the annual average daily flow is 4.5 MGD or greater.

20. Other Permit Requirements :

a) Part I.B. of the permit contains quantification levels and compliance reporting instructions.

9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9 VAC 25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9 VAC 25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

b) Permit Section Part I.C., details the requirements for Toxics Management Program.

The VPDES Permit Regulation at 9 VAC 25-31-210 requires monitoring and 9 VAC 25-31-220.I, requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. A TMP is imposed for municipal facilities with a design rate >1.0 MGD, with an approved pretreatment program or required to develop a pretreatment program, or those determined by the Board based on effluent variability, compliance history, IWC, and receiving stream characteristics.

The Town of Culpeper WPCF is a POTW with a design flow of 4.0 MGD with expansion plans for 6.0 MGD and has an approved pretreatment program. The existing Whole Effluent Toxicity (WET) limit of 1.8 TU_c is not adequate to protect against toxicity for the 4.0 MGD flow tier (Attachment 10), and will be updated to 1.5 TU_c based on current calculations following the existing TMP Agency Guidance. The 6.0 MGD flow tier shall also have a WET limit of 1.5 TU_c in order to safely protect against toxicity (Attachment 10). Monitoring at the 4 MGD tier shall be 1/6M. Once the facility receives the CTO for the 6 MGD tier, quarterly monitoring shall commence 6 months after the CTO is issued and continue for two years. After two years, the facility may submit a request for the frequency of monitoring to be reduced.

As part of their comments to the draft permit, the permittee asked that staff consider removing the WET limit once the facility received the CTO for the 6 MGD flow tier. In their comments they stated,

> " The antibacksliding rule, 9VAC25-31-220.L, allows for the adjustment of the WET provision at Part I.A.2. and Part I.D.1.a to "NL" (no limit, monitor and report) to apply upon issue of the CTO for the 6 MGD facility. More specifically, this request is appropriate under provision 2.a. of the antibacksliding rule, which applies in the case here of "material and substantial alterations or additions to the permitted facility. 9VAC25-31-220.L.2.a."

It is staff's best professional judgment that the limit remain in the permit during the upcoming permit term. During the next reissuance, staff shall review the results of the toxicity testing. If warranted, staff will conduct an antibacksliding analysis to determine the appropriateness of continuing the WET limit.

c) Permit Section Part I.D., details the requirements of a Pretreatment Program.
The VPDES Permit Regulation at 9 VAC 25-31-210 requires monitoring and 9 VAC 25-31-220.D. requires all discharges to protect water quality. The VPDES Permit Regulation at 9 VAC 25-31-730. through 900., and 40 CFR Part 403 requires POTWs with a design flow of >5 MGD and receiving from Industrial Users (IUs) pollutants which pass through or interfere with the operation of the POTW or are otherwise subject to pretreatment standards to develop a pretreatment program.

The Town of Culpeper WPCF is a POTW with a design flow of 4.0 MGD with expansion to 6.0 MGD. The Town of Culpeper WPCF currently receives flow from the following Significant Industrial Users (SIU): Cintas, Rochester, Continental Teves, and the Town of Culpeper WTP.

The Town of Culpeper WWTP has an approved Pretreatment Program in place and is required to submit annual reports summarizing the program's activities over the previous year. Specific program requirements and reporting may be found in Part I.D. of the permit. The local limits for the SIUs were recalculated and will be public noticed as part of the permit reissuance.

d) Permit Section Part 1.E. details requirements of the Sewage Sludge Management Plan, Sludge Monitoring and Additional Reporting Requirements.

1. Regulations:

The VPDES Permit Regulation (VAC 25-31-10 et seq.), has incorporated technical standards for the use or disposal of sewage sludge, specifically land application and surface disposal, promulgated under 40 CFR Part 503.

The Permit Regulation (9 VAC 25-31-420) also establishes the standards for the use or disposal of sewage sludge. This part establishes standards that consist of general requirements, pollutant limits, management practices, and operational standards for the final use or disposal of sewage sludge generated during the treatment of domestic sewage in the treatment works.

2. Evaluations:
Sludge Classification:

The Town of Culpeper WPCF is considered as Class I sludge management facility. The permit regulation (9 VAC 25-31-500) defines a Class I sludge management facility as any POTW which is required to have an approved pretreatment program defined under Part VII of the VPDES Permit Regulation (9 VAC 25-31-730 to 900) and/or any treatment works treating domestic sewage sludge that has been classified as a Class I facility by the Board because of the potential for its sewage sludge use or disposal practice to adversely affect public health and the environment.

Sludge Pollutant Concentration:
The average pollutant concentrations from sewage sludge analyses provided as part of the Town of Culpeper WPCF application for the permit reissuance are presented in Table 4. The analysis results are from samples collected during the period from August 2004 through November 2008.

Table 4 – Town of Culpeper WPCF Results

Pollutant	Average Concentration (mg/kg dry weight)	Sample Type
Arsenic	4	Composite
Chromium	42	Composite
Cadmium	3	Composite
Copper	488	Composite
Lead	59	Composite
Mercury	2	Composite
Molybdenum	21	Composite
Nickel	31	Composite

Selenium	5	Composite
Zinc	691	Composite

All sewage sludge applied to the land must meet the ceiling concentration for pollutants, listed in Table 5. Sewage sludge applied to the land must also meet either pollutant concentration limits, cumulative pollutant loading rate limits, or annual pollutant loading rate limits, also listed in Table 5.

Cumulative pollutant loading limits or annual pollutant loading limits may be applied to sewage sludge exceeding pollutant concentration limits but meeting the ceiling concentrations, depending upon the levels of treatment achieved and the form (bulk or bag) of sludge applied. It should be noted that ceiling concentration limits are instantaneous values and pollutant concentration limits are monthly average values. Calculations of cumulative pollutant loading should be based on the monthly average values and the annual whole sludge application rate.

Table 5- SEWAGE SLUDGE POLLUTANT LIMITS

Pollutant	Ceiling Concentration Limits for All Sewage Sludge Applied to Land (mg/kg)*	Pollutant Concentration Limits for EQ and PC Sewage Sludge (mg/kg)*	Cumulative Pollutant Loading Rate Limits for CPLR Sewage Sludge (kg/hectare)	Annual Pollutant Rate Limits for APLR Sewage Sludge (kg/hectare/356 day period)**
Arsenic	75	41	41	2.0
Cadmium	85	39	39	1.9
Copper	4,300	1,500	1,500	75
Lead	840	300	300	15
Mercury	57	17	17	0.85
Molybdenum	75	---	---	---
Nickel	420	420	420	21
Selenium	100	100	100	5.0
Zinc	7,500	2,800	2,800	140
Applies to:	All sewage sludge that is land applied	Bulk sewage sludge and bagged sewage sludge	Bulk sewage sludge	Bagged sewage
From VPDES Permit Reg. Part VI	Table 1, 9 VAC 25-31-540	Table 3, 9 VAC 25-31-540	Table 2, 9 VAC 25-31-540	Table 4, 9 VAC 25-31-540

*Dry-weight basis
**Bagged sewage sludge is sold or given away in a bag or other container.

Comparing data from Table 4 with Table 5 shows that metal concentrations are significantly below the ceiling and PC concentration requirements.

3. Options for Meeting Land Application:

There are four equally safe options for meeting land application requirements. The options include the Exceptional Quality (EQ) option, the Pollutant Concentration (PC) option, the Cumulative Pollutant Loading Rate (CPLR) option, and the Annual Pollutant Loading Rate (APLR) option.

Pollutant Concentration (PC) is the type of sludge that may only be applied in bulk and is subject to general requirements and management practices; however, tracking of pollutant loadings to the land is not required. The sludge from the Town of Culpeper WPCF is considered Pollutant Concentration (PC) sewage sludge for the following reasons:

a) The bulk sewage sludge from the Town of Culpeper WPCF meets the PC limits in Table 1 of VPDES

Permit Regulation Part VI, 9 VAC 25-31-540.

b) The VPDES Permit Regulation, Part VI, Subpart D, (9 VAC 25-31-690 through 720) establishes the requirements for pathogen reduction in sewage sludge. The Town of Culpeper WPCF is considered to produce a Class B sludge in accordance with the regulation (9 VAC 25-31-710.B.2. - Class B -Alternative 2. Alternative 2 defines Class B sludge as "Sewage sludge that is used or disposed that has been treated in a process that is equivalent to a Process to Significantly Reduce Pathogens (PSRP), as described in (9 VAC 25-31-710.D.). The Town of Culpeper WPCF treats sludge using an anaerobic digestion process to reduce pathogens in accordance with the requirements of (9 VAC 25-31-710.D.3.).

c) The VPDES Permit Regulation, Part VI, Subpart D, (9 VAC 25-31-690 through 720) also establishes the requirements for Vector Attraction Reduction in sewage sludge. Based on the information supplied with the VPDES Sludge Application, the Town of Culpeper WPCF meets the requirements for Vector Attraction Reduction as defined by (9 VAC 25-31-720.B.1): the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent, calculated according to the method in 9 VAC 25-31-490.B.8.).

4. Parameters to be Monitored:

In order to assure the sludge quality, the following parameters require monitoring: Arsenic, Cadmium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, and Zinc.

In order to ensure that proper nutrient management and pH management practices are employed, the following parameters are required: pH, Total Kjeldahl Nitrogen, Ammonia Nitrogen, Nitrate Nitrogen, Total Phosphorus, Total Potassium, and Alkalinity (lime treated sludge should be analyzed for percent calcium carbonate equivalence). The nutrient and pH monitoring requirements apply only if the permittee land applies their own sludge. Since Town of Culpeper WPCF has contracted the land application responsibilities to Recyc Systems of Remington, Virginia, they are not required to monitor for nutrients, pH, Total Potassium and Alkalinity.

Soil monitoring in conjunction with soil productivity information is critical, especially for frequent applications, to making sound sludge application decisions from both an environmental and an agronomic standpoint. Since Town of Culpeper WPCF has contracted the land application responsibilities to Recyc Systems, of Remington, Virginia, they are not required to perform soil monitoring.

5. Monitoring Frequency:

The monitoring frequency is based on the amount of sewage sludge applied in a given 365-day period. The permit application indicates that the total dry metric tons of sewage sludge generated at Town of Culpeper WPCF are 447 dry metric tons per 365-day period. In the permit manual, the monitoring frequency for facilities that produce equal to or greater than 290 metric tons but less than 1500 metric tons per 365-day period is once per quarter. This reissuance proposes a monitoring frequency of 1/quarter.

Town of Culpeper WPCF is required to provide the results of all monitoring performed in accordance with Part I.A., and information on management practices and appropriate certifications no later than February 19th of each year (as required by the 503 regulations) to the Northern Regional Office of the Department of Environmental Quality. Each report must document the previous calendar year's activities.

6. Sampling:

Representative sampling is an important aspect of monitoring. Because the pollutant limits pertain to the quality of the final sewage sludge applied to the land, samples must be collected after the last treatment process prior to land application. Composite samples should be required for all samplings from this facility.

7. Sludge Management Plan (SMP):

The SMP is required to be part of the VPDES permit application. The VPDES Sewage Sludge Permit

Application Form and its attachments will constitute the applicant's SMP. Any proposed sewage treatment works treating domestic sewage must submit a SMP with the appropriate VPDES permit application forms at least 180 days prior to the date proposed for commencing operations. The permittee shall conduct all sewage sludge use or disposal activities in accordance with the SMP approved with the issuance of this permit. Any proposed changes in the sewage sludge use or disposal practices or procedures followed by the permittee shall be documented and submitted for Virginia Department of Environmental review and approval no less than 90 days prior to the effective date of the changes.

Upon approval, the SMP becomes an enforceable part of the permit. The permit may be modified or alternatively revoked and reissued to incorporate limitations/conditions necessitated by substantial changes in sewage sludge use or disposal practices.

Town of Culpeper WPCF has submitted the VPDES Sewage Sludge Permit Application Form and its attachments. Their SMP dated March 26, 2009 is on file at the Northern Regional Office of the Department of Environmental Quality.

8. Reporting Requirements:

The reporting requirements are for POTWs with a design flow rate equal to or greater than 1 MGD (majors), POTWs that serve a population of 10,000 or greater, and Class I sludge management facilities. A permit special condition, which requires these generators to submit an annual report on February 19th of each year, is included. The Town of Culpeper WPCF shall use the Discharge Monitoring Report (DMR) forms as part of the annual report. A sample form (SP1 and S01) with proper DMR parameter codes and its instructions are provided. In addition to the DMR forms, the generators who land apply sewage sludge are responsible for submitting the additional information required by 9 VAC 25-31-590, *i.e.*, appropriate certification statements, descriptions of how pathogen and vector attraction reduction requirements are met, descriptions of how the management practices (if applicable) are being met, and descriptions of how site restrictions (if applicable) are being met.

9. Records Keeping:

This special condition outlines record retention requirements for sludge meeting Class B pathogen reduction and vector attraction reduction alternative 1-10. Table 6 presents the record keeping requirements.

Table 6: Record Keeping for PC Sludge

1	Pollutant concentrations of each pollutant in Part I.A.3. of the permit;
2	Description of how the pathogen reduction requirement in Part I.A.3. of the permit are met;
3	Description of how the vector attraction requirements in Part I.A.3. of the permit are met;
4	Description of how the management practice specified in the approved Sludge Management Plan and/or the permit are met;
5	Description of how the site restriction specified in the Sludge Management Plan and/or the permit are met;
6	Certification statement in Part I.E.3.b.2.f. of the permit.

21. Other Special Conditions :

a) 95% Capacity Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.B.2. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.

b) Indirect Dischargers. Required by VPDES Permit Regulation, 9 VAC 25-31-280 B.9 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

c) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E. Within 90 days of the effective date of this permit, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the

Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

d) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

e) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9 VAC 25-31-200 C, and Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.) requires licensure of operators. This facility requires a Class I operator.

f) Reliability Class. The Sewage Collection and Treatment Regulations at 9 VAC 25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of I.

g) Water Quality Criteria Reopener. The VPDES Permit Regulation at 9 VAC 25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

h) Sludge Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.C.4. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works. See Section Part I.E of the permit for this special condition.

i) Sludge Use and Disposal. The VPDES Permit Regulation at 9 VAC 25-31-100.P., 220.B.2., and 420-720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage. See Section Part I.E of the permit for this special condition.

j) E3/E4. 9 VAC 25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

k) Nutrient Reopener. 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

l) Groundwater Monitoring Plan. The permittee shall continue sampling and reporting in accordance with the groundwater monitoring plan approved on January 14, 2004. The purpose of this plan is to determine if the system integrity is being maintained, and to indicate if activities at the site are resulting in violations of the Board's Groundwater Standards. The approved plan is an enforceable part of the permit. Any changes to the plan must be submitted to the Northern Regional Office for approval.

m) Corrective Action Plan. Should monitoring results indicate contamination of the groundwater, the permittee shall submit a Corrective Action Plan within 60 days of being notified by the Northern Regional Office. The plan shall set forth the steps to be taken by the permittee to ensure that the contamination source is eliminated or that the contaminant plume is contained on the permittee's property. In addition, based on the extent of contamination, a risk analysis may be required. Once approved, this plan and/or analysis shall be incorporated to the permit by reference and become an enforceable part of the permit.

n) Low Level PCB Testing. This special condition requires that the permittee conduct low-level PCB monitoring during the term of the permit due to the PCB impairment in Mountain Run for the American Eel and in the Rappahannock Watershed.

o) Instream Monitoring. This special condition requires that the permittee conduct instream monitoring for total hardness upstream and downstream of the discharge point. This monitoring shall be conducted the same day that the monitoring is conducted on the final effluent for dissolved copper, dissolved zinc, and total hardness.

p) Inflow & Infiltration. This special condition requires that the permittee submit annual reports on work done to mitigate inflow and infiltration to the collection system. The permittee noted during permit negotiations that the Town has previously had an I&I study completed and that the Town has committed resources to identifying and mitigating I&I in the collection system.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a) Special Conditions:
1) The Water Quality Criteria Monitoring Special Condition was removed. EPA Form 2A requires three scans as part of the application, so the special condition is redundant.
2) The Confirmation Testing Special Condition was removed.
3) The Nutrient Offsets Special Condition was removed since the facility's offset plan submitted as part of the Nutrient General Permit will not use non-point source offsets to offset the increased phosphorus load from the expanded facility.
4) A Nutrient Reopener Special Condition was added in conformance with current guidance.
5) An E3/E4 Special Condition was added in conformance with current guidance.
6) A special condition requiring low-level PCB monitoring was included with this reissuance.
7) A special condition for instream monitoring for total hardness was added to the permit.
8) A special condition for submitting an annual report for the mitigation of Inflow and Infiltration was added to the permit.

b) Monitoring and Effluent Limitations:
1) The 3.0 MGD flow tier was removed since the facility received a CTO for the 4.0 MGD flow tier on June 12, 2008.
2) The 4.5 MGD flow tier was removed since the facility is currently under construction for the 6.0 MGD flow tier.
3) All effluent limits are now expressed as two significant figures.
4) All chlorine limits have been removed since the facility placed the UV equipment online beginning August 5, 2009 and chlorine is no longer used for disinfection.
5) The winter TKN limit of 8.0 mg/L at both flow tiers was removed. It is staff's best professional opinion that the TKN limit is unnecessary given the fact that there is an ammonia limit in place in the winter and since there are new BNR tanks online with diffused aeration, the BOD is expected to be very low, and partial nitrification will not be an issue. The DO standard for the stream will still be protected as will the ammonia criteria.
6) The monthly average and weekly average loadings for TKN are now expressed as lb/day.
7) The WET limit was updated based on current Agency guidance for TMP programs.
8) Monitoring was added for Dissolved Copper, Dissolved Zinc, and Total Hardness.
9) Monitoring was added for Alpha-Endosulfan.

10) Fecal coliform limits were removed from the permit. A monthly E. coli limit of 126 cfu/100mL was placed in the permit as well as a rolling 12 month maximum load of 3.23E+12 cfu/year.

24. Variances/Alternate Limits or Conditions:

None

25. Public Notice Information:

First Public Notice Date: 1/8/10 Second Public Notice Date: 1/15/10

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3834, alison.thompson@deq.virginia.gov. See Attachment 11 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):
While the segment of Mountain Run that receives the discharge from VA0061590 is not listed as impaired on the 303(d) list, several downstream segments of Mountain Run are listed as impaired:

VAN-E09R_MTN03A00: Extends from the Route 15/29 bridge crossing downstream until the confluence with Jonas Run.

- Aquatic Life Use – Benthic Macroinvertebrates. Two biological monitoring events in 2006 each resulted in a VSCI score which indicates an impaired macroinvertebrate community.

- Fish Consumption Use: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 12/13/04, limits American eel consumption to no more than two meals per month. The affected stretch of Mountain Run extends roughly 19 miles, from the Route 15/29 bridge crossing near Culpeper City downstream until the confluence with the Rappahannock River.

VAN-E09R_MTN02A04: Extends from the confluence with Jonas Run downstream until the confluence with Flat Run.

- Aquatic Life Use – Benthic Macroinvertebrates: The impairment is based on benthic macroinvertebrate biological monitoring at immediate upstream (3-MTN018.83) and downstream (3-MTN003.31) stations.

- Fish Consumption Use: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 12/13/04, limits American eel consumption to no more than two meals per month. The affected stretch of Mountain Run extends roughly 19 miles, from the Route 15/29 bridge crossing near Culpeper City downstream until the confluence with the Rappahannock River.

VAN-E09R_MTN01A00: Extends from the confluence with Flat Run downstream until the confluence with the Rappahannock River.

- Aquatic Life Use – Benthic Macroinvertebrates: A total of three biological monitoring events in 2003 and 2004 resulted in a VSCI score which indicates an impaired macroinvertebrate community.

- Fish Consumption Use: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 12/13/04, limits American eel consumption to no more than two meals per month. The affected stretch of Mountain Run extends roughly 19 miles, from the Route 15/29 bridge crossing near Culpeper City downstream until the confluence with the Rappahannock River.

- Recreational Use: Sufficient excursions from the instantaneous *E. coli* bacteria criterion (6 of 16 samples - 37.5%) were recorded at DEQ's ambient water quality monitoring station (3-MTN000.59) at the Route 620 crossing to assess this stream segment as not supporting of the recreation use goal for the 2008 water quality assessment. The segment was previously listed for a fecal coliform bacteria impairment, from 1996 through 2006. The *E. coli* bacteria impairment was first listed in 2006.

Recreation Use Impairment – Yes. Approved by EPA on 04/27/2001.
Aquatic Life Use Impairment – No, TMDL due by 2020.
Fish Consumption Impairment – No, TMDL due by 2018.

***The Mountain Run TMDL was modified by DEQ in 2009 and accepted by EPA; this facility was given a WLA of 3.23E+12 cfu/year of *E. coli* bacteria. This is equivalent to discharging at their maximum permitted design flow (6.0 MGD) with a permitted limit for *E. coli* at 39 cfu/100mL.

TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

27. Additional Comments:

Previous Board Action: Consent Order Amendment effective March 17, 2006. As a result of continued effluent limit violations, failure to complete groundwater monitoring toxicity testing, and failure to complete construction of the WWTP upgrade, the facility is required to comply with relaxed interim effluent limitations and complete the activities previously required by the June 21, 2004 Consent Order. In addition to completion of the previously required actions, the facility is also required to upgrade and expand the WWTP to handle additional flows and ensure consistent compliance with the permit requirements, as well as address I/I problems through a plan and schedule to be submitted for DEQ approval. This Order was cancelled effective August 1, 2008.

Staff Comments: The permit reissuance was delayed due to staff workload and the modeling work done for the Mountain Run Bacteria TMDL.

EPA Checklist: The checklist can be found in Attachment 12.

Public Comment: Greg Wichelns from the Culpeper Soil and Water Conservation District sent emails asking about whether the E. coli limit in the draft permit was an expansion beyond the quality and quantity included in the 2000 TMDL for Mountain Run. Staff provided him information on the 2009 TMDL modification. He also asked about the metals monitoring in the draft permit. Staff provided him the data that supported the additional monitoring required in the draft permit. He did not submit any formal comments on the draft permit.

Permittee Comments: The Town provided extensive comments to the draft permit. In the comment letter they requested a public hearing but also stated that they preferred to resolve all issues without a public hearing. Staff discussed the comments during two phone calls on February 4 and February 17, 2010. The following changes to the draft permit were made based on the negotiations:

1) *E. coli* – The Town asked that the limit for *E. coli* be 126 cfu/100mL. Due to the approved TMDL for Mountain Run which was originally approved in 2001 and was modified in 2009, staff had placed a limit of 39 cfu/100mL. This facility was given a WLA of 3.23E+12 cfu/year of *E. coli* bacteria in the modified TMDL. In lieu of placing a 39 cfu/100mL monthly average geometric mean in the permit, staff placed a 126 cfu/100mL as well as the maximum load from the modified TMDL (3.23E+12 cfu/year). The load will be calculated on a rolling 12 month window to demonstrate compliance with the TMDL.
2) Total Phosphorus Load – The Town asked that the annual load included in the draft permit be removed. This load was developed in accordance with Agency guidance memo GM 04-2017.
3) Total Phosphorus Annual Average – The Town requested that the limit at the 6 MGD tier be 0.3 mg/L and not 0.22 mg/L. Staff had based this concentration on 9VAC25-40-70A and the documentation submitted as part of the Town's offset plan with the Nutrient General Permit. The facility was given a WLA based on a 4.5 MGD design flow and the additional phosphorus load from the 6 MGD facility would be offset by treating to a lower concentration. As a compromise, the 0.30 mg/L annual average concentration was placed in the Part I.A.2. limitation table, but was footnoted so that the facility shall meet the 0.22 mg/L annual average when the daily average flow reaches and exceeds 4.5 MGD.
4) WET Testing – The Town requested that toxicity monitoring be reduced from quarterly to annual testing and that the WET limit be removed at the 6 MGD flow tier. Staff reviewed the toxicity results and it is staff's best professional opinion that since the facility has exhibited toxicity that required a Toxic Reduction Evaluation and limit development, the monitoring should not be reduced to annual at the 4 MGD flow tier. Staff did reduce the frequency to semi-annual at the 4 MGD tier. Eight quarterly samples are still required once the facility expands to 6 MGD. After the eight quarterly samples are collected, the Town may then request that frequency of monitoring be reduced. It is also staff's best professional judgment that the WET limit remain in the permit for the next reissuance. Staff agreed to revisit the necessity of the toxicity limit during the next reissuance in 2015.
5) Metals/Hardness/Endosulfan – The Town's comment for the metals monitoring was that the quarterly monitoring was too frequent and requested annual monitoring. Staff noted that guidance suggests monthly monitoring for toxics such as copper, zinc, and Endosulfan. Since the facility is undergoing extensive upgrade, staff agreed to not require monitoring until after the CTO is obtained for the 6 MGD flow tier. The frequency was changed from 1/3M for the metals and hardness and 1/6M for Endosulfan to 1/4M for all parameters to commence January 1, 2011. Staff would use the larger data set from the upgraded facility to perform a reasonable potential analysis during the next reissuance to determine if limits are necessary for copper, zinc, and Endosulfan.
6) Treatment Works Closure Special Condition – The Town asked that this special condition be removed since they have been removing old treatment units as part of the current expansion and upgrade construction work. The Town submitted documentation to clarify the work that had been done to date. Staff concurred and the special condition was removed from the draft.
7) Instream Monitoring – The Town asked for a slight wording change to the special condition; the wording update did not change the intent of the monitoring, so the change was made. Staff did also update the language in the special condition to reflect the changes made to the total hardness and metals frequency of monitoring.
8) Groundwater Monitoring – The Town noted that they would be submitting a request to update the approved Groundwater Monitoring Plan. No changes were made to the draft permit.
9) Nutrient Offsets – The Town commented that this special condition was unnecessary since they planned to self offset and not rely on non-point source offsets. Staff reviewed the offset plan documentation submitted with the Registration Statement for the Nutrient General Permit. Staff concurred and the special condition was removed.
10) Inflow & Infiltration Plan – The Town asked that they not be required to commission another study for I&I to the collection system. Chris Hively noted that the Town has a plan that was done in the late 1990s and that work is ongoing to identify problem areas in the system. The requirement for a new study was removed from the draft, but the Town will still be required to submit an annual report on progress made to mitigate and eliminate I&I.

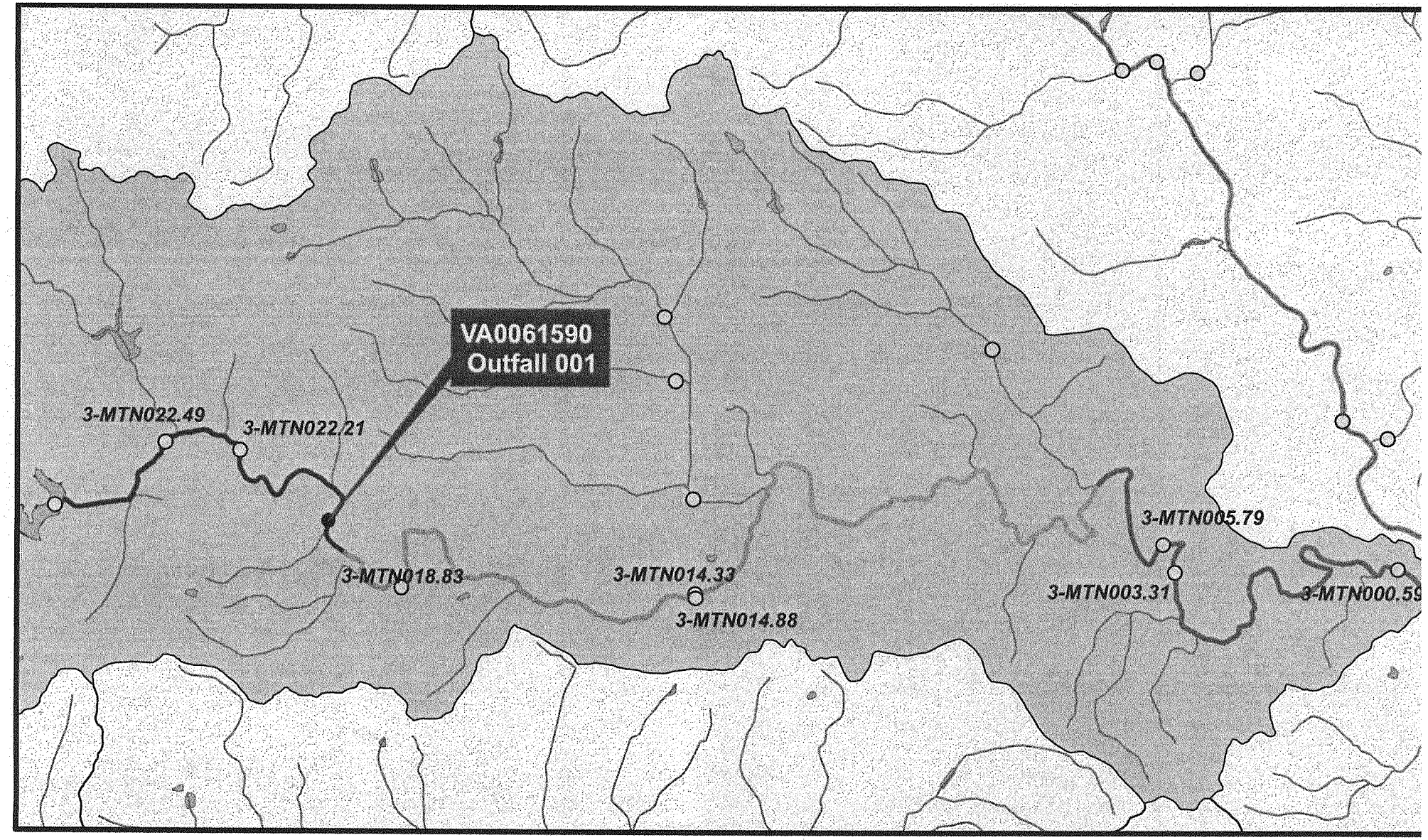
Mountain Run Flow Data (1950 - 1997)
Based on Flow Determination Memo - April 9, 1999

SITEID	NAME	Drainage Area	Harmonic Mean	High Flow 7Q10	High Flow 1Q10	30Q5	7Q10	1Q10	30Q10*	1Q30	
01665000	Mountain Run near Culpeper, Va. - Unregulated	*15.9*	*4*	*3.7*	*2.7*	*0.7*	*0.2*	*0.14*		*N/A*	
01665000	Mountain Run near Culpeper, Va. - Regulated	15.9	6.4	3.6	2.9	1.9	1	0.79	1.1	N/A	
	Mountain Run @ Lake Pelham	8	2	1.9	1.4	0.35	0.1	0.07	0.36	N/A	
		23.9	**8.4**	**5.5**	**4.3**	**2.25**	**1.1**	**0.86**	**1.46**		
	Water Withdrawal from Lake Pelham		-	1.9	1.9	1.9	1.9	1.9	1.9		
	Mountain Run flow below Dam	23.9	**0.00**	**3.60**	**2.40**	**0.35**	**0.00**	**0.00**	**0.00**		
	Mountain Run @ Town of Culpeper WWTP ** (Drainage Area Comparison based on unregulated data from 1950 - 1958)	12.3	**3.09**	**2.86**	**2.09**	**0.54**	**0.15**	**0.11**	**N/A**		**cfs**
	Add flow below Dam		**3.09**	**6.46**	**4.49**	**0.89**	**0.15**	**0.11**	**N/A**		**cfs**
			2.00	**4.17**	**2.90**	**0.58**	**0.10**	**0.07**	**N/A**		**mgd**

* 30Q10 flow as per G. Powell - 3/8/04

** Drainage Area from dam to Culpeper WWTP

Attachment 1



Attachment 2

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3801
www.deq.virginia.gov

Preston Bryant
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

January 7, 2008

Mr. J. Brannon Godfrey, Jr.
Town Manager
Town of Culpeper
400 South Main Street
Culpeper, VA 22701

Re: Town of Culpeper Wastewater Treatment Plant, Permit VA0061590

Dear Mr. Godfrey:

Enclosed are copies of the facility technical and laboratory inspection reports generated from observations made while performing a Facility Technical Inspection at the Culpeper Waste Water Treatment Plant (WWTP) on December 4, 2007. The compliance/monitoring staff would like to thank Jim Hust, John Morgan, and David Olsen for their time and assistance during the inspection.

Summaries for both the technical and laboratory inspections are enclosed. The facility had Deficiencies for the laboratory inspection for Laboratory Records, Laboratory Equipment, TSS and BOD_5. Please note the requirements and recommendations addressed in the technical summary, especially with regards to inflow and infiltration issues. Please submit in writing a progress report to this office by **February 7, 2008** for the items addressed in the summary. Your response may be sent either via the US Postal Service or electronically, via E-mail. If you chose to send your response electronically, we recommend sending it as an Acrobat PDF or in a Word-compatible, write-protected format.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at (703) 583-3909 or by E-mail at wgharback@deq.virginia.gov.

Sincerely,

Wilamena Harback

Wilamena Harback
Environmental Specialist II

cc: Permits / DMR File
Compliance Manager
Compliance Auditor
Compliance Inspector
OWPC (Steve Stell) – EPA copy

Attachment 3

Summary of conditions from last inspection
(December 14, 2006)

Problem identified		Corrected	Not Corrected
1.	Assure that the scum collection system for the Primary Clarifiers are working properly to minimize any grease clumps from passing across the weirs.	[X]	[ ]
2.	Continue to identify and repair the areas in the collection system causing I&I problems through minimizing and eliminating any problems areas.	[X]	[ ]
3.	Maintain the Gravity Thickening process unit to prevent any solids going over the weir.	[ ]	[X]
4.	Clean the wet well in the Influent Pump Station #1 promptly after any high flow event.	[X]	[ ]
5.	Proper maintenance of the EQ Lagoons and EQ Basin is necessary to prevent breaching of the liners and failure of the berms. The excessive vegetation encourages burrowing animals to take up residence. The roots from shrubs and trees can crack the clay liners which can cause leaks.	[ ]	[X]
6.	Repair the ripped PVC liner in the EQ Lagoon cell #1 and purge any air pockets from underneath the liner.	[ ]	[X]
7.	Evict any groundhogs burrowing near the Primary Clarifiers and fill in any burrow holes.	[ ]	[X]
8.	Increase the Clarifier weir cleaning schedule.	[X]	[ ]
9.	The staff uses half-face respirators when changing the one-ton chlorine cylinders. Given the reactivity of chlorine gas with water (including the moisture on skin, in eyes and mucus membranes) the facility may wish to consider providing full-face respirators for further personal protective equipment (PPE).	[ ]	[X]

Summary of conditions for current inspection

Comments:

- The facility recently completed the installation of a new SCADA (Supervisory Control and Data Acquisition) system for plant control and operations.

Recommendations for action:

1. **Repair the weir where the gaskets/seals have separated from the weir plates on the primary and secondary clarifiers.**
2. **The dumpster that receives the grit appears to have an un-plugged hole in the bottom which allowed grit screening to spill out on to the holding pad.**
3. **The influent and effluent flow meters were not marked with the calibration dates.**
4. **There was an additional tear in cell #1 of the equalization lagoon that was in addition to the rips that were noted in the previous inspection on December 14, 2006 (also not repaired).**
5. **Significant soda ash on the floor of the mixing room that creates safety and housekeeping issues.**
6. **Overflow area behind the digester at the time of inspection. Since the inspection there was a second overflow that was reported.**
7. **Two pumps at the Raw Pump Station #1 are still out of service (pump #1 and #3). This is a repeat issued noted form the previous inspection on December 14, 2006.**
8. **Provide to DEQ by February 8, 2008 a report on the Town's Inflow and Infiltration (I&I) program at Culpeper WWTP. This report shall include, but not be limited to, the following:**
    - **The current I&I rehabilitation budget for the Town of Culpeper's collection system.**
    - **The current I&I budget versus the funds that were spent for the last three fiscal years.**
    - **A cost-effective analysis of potential rehabilitation projects and a schedule for completion.**
    - **An estimate of the base flow that is attributed to I&I.**

DEQ
WASTEWATER FACILITY INSPECTION REPORT
PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0061590	**10/01/04**		**09/30/09**

Facility Name	Address	Telephone Number
Culpeper Wastewater Treatment Plant	**15108 Service Lane, Culpeper, VA**	**(540) 825-1199**
Owner Name	Address	Telephone Number
Town of Culpeper	**400 South Main, Culpeper, VA**	**(540) 829-8250**
Responsible Official	Title	Telephone Number
Mr. Harry Hughes	**Director of Environmental Services**	**(540) 825-8671**
Responsible Operator	Operator Cert. Class/number	Telephone Number
Mr. James Hust	**Class I 1909-000375**	**(540) 825-1199**

TYPE OF FACILITY:

DOMESTIC				**INDUSTRIAL**			
Federal		Major	**X**	Major		Primary	
Non-federal	**X**	Minor		Minor		Secondary	

INFLUENT CHARACTERISTICS:	DESIGN:
Flow	**4.0 MGD**
Population Served	**12,500**
Connections Served	**5,000**
BOD_5 **(Oct 2007)**	**179**
TSS **(Oct 2007)**	**80**

EFFLUENT LIMITS: (mg/L unless specified)

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**3.0**	**NL**	**TSS (Jun-Nov)**		**15.0**	**22.5**
pH (SU)	**6.0**		**9.0**	**TSS (Dec-May)**		**30.0**	**45.0**
DO	**6.5**			**BOD (Jun-Nov)**		**15.0**	**22.5**
Fecal Coliform (n/100ml)		**200**		**BOD (Dec-May)**		**30.0**	**45.0**
TRC Total Contact	**1.0**			**NH3 (Jun-Nov)**		**2.1**	**2.6**
TRC Inst Res Max		**0.008**	**0.010**	**NH3 (Dec-May)**		**4.9**	**6.0**

Receiving Stream	**Mountain Run**
Basin	**Rappahannock River**
Discharge Point (LAT)	**38° 27' 27" N**
Discharge Point (LONG)	**77° 58' 08" W**

VPDES NO. **VA0061590**

REV 5/00

DEQ
WASTEWATER FACILITY
INSPECTION REPORT
PART 1

Inspection date: **December 4, 2007**

Date form completed: **January 4, 2007**

Inspection by: **Wilamena Harback**

Inspection agency: **DEQ NRO**

Time spent: **42 hrs**

Announced: **No**

Reviewed by:

Scheduled: **Yes**

Present at inspection: **Beth Biller – DEQ**
Paula Byers & Jim Hust – Town of Culpeper WWTP

TYPE OF FACILITY:

	Domestic	**Industrial**	
[ ] Federal	[**X**] Major	[ ] Major	[ ] Primary
[**X**] Nonfederal	[ ] Minor	[ ] Minor	[ ] Secondary

Type of inspection:

[**X**] Routine
[ ] Compliance/Assistance/Complaint
[ ] Reinspection

Date of last inspection: **December 12, 2006**
Agency: **DEQ NRO**

Population served: approx. **12,500**

Connections served: approx. **5,000**

Last month average: (Influent) **October 2007**:

Flow:	**2.799**	**MGD**	BOD_5	**179**	**mg/L**	TSS	**80**	**mg/L**

Last month average: (Effluent) **October 2007**:

Flow:	**2.799**	**MGD**	pH	**6.2**	**S.U.**	DO	**8.3**	**mg/L**
Temperature	**16.8**	**° C**	Fecal Coliform	**6.8**	**n/CML**	BOD_5, June – Nov.	**< QL**	**mg/L**
TSS, June-Nov	**3.5**	**mg/L**	TRC, Total Contact	**0.9**	**mg/L**	TRC, Inst Tech Min Limit	**0.9**	**mg/L**
TRC, Inst Res Max	**<QL**	**mg/L**	Total Phosphorous	**0.96**	**mg/L**	Ammonia, as N June – Nov.	**0.67**	**mg/L**

Quarter average: (Effluent) **August - October 2007**

Flow:	**2.679**	**MGD**	pH	**6.3**	**S.U.**	DO	**8.0**	**mg/L**
Temperature	**19.4**	**° C**	Fecal Coliform	**2.3**	**n/CML**	BOD_5, June – Nov.	**< QL**	**mg/L**
TSS, June-Nov	**3.8**	**mg/L**	TRC, Total Contact	**0.75**	**mg/L**	TRC, Inst Tech Min Limit	**0.75**	**mg/L**
TRC, Inst Res Max	**<QL**	**mg/L**	Total Phosphorous	**1.18**	**mg/L**	Ammonia, as N June – Nov.	**0.26**	**mg/L**

To: Alison Thompson
From: Katie Conaway

Date: July 28, 2009
Subject: Planning Statement for Town of Culpeper Water Pollution Control Facility
Permit Number: VA0061590

Discharge Type: Major Municipal
Discharge Flow: 4.0 MGD with an expansion to 6.0 MGD

Receiving Stream: Mountain Run
Latitude / Longitude: 38.27.56, 77.58.08
Waterbody ID: E09, RA19

1. Is there monitoring data for the receiving stream?

Yes.

- If yes, please attach latest summary.

VA0061590 discharges into Mountain Run at Assessment Unit VAN-E09R_MTN04A04. This segment of Mountain Run extends from the outlet of Lake Pelham, downstream until the Route 15/29 Bridge Crossing (approximately 4.56 rivermiles). The following is a monitoring summary for Segment VAN-E09R_MTN04A04 as taken from the 2008 Integrated Assessment:

Class III, Section 4.

DEQ fish tissue/sediment station 3-MTN022.21, at Fauquier Road, and ambient monitoring station 3-MTN022.49, at Route 522.

The aquatic life, fish consumption, recreation, and wildlife uses are considered fully supporting. However, the consensus based probable effects concentration (PEC) sediment screening values for the following parameters were exceeded in sediment samples collected in 2006; total PAHs (22,800 ppb, dry weight), anthracene (845 ppb, dry weight), benz(a) anthracene (1,050 ppb, dry weight), phenanthrene (1,170 ppb, dry weight), chrysene (1,290 ppb, dry weight), naphthalene (561 ppb, dry weight), pyrene (1,520 ppb, dry weight), benzo(a) pyrene (1,450 ppb, dry weight), fluorene (536 ppb, dry weight), and fluoranthene (2,230 ppb, dry weight) . These are all noted as observed effects for the aquatic life use.

- If no, where is the nearest downstream monitoring station.

N/A

2. Is the receiving stream on the current 303(d) list?

While the segment of Mountain Run that receives the discharge from VA0061590 is not listed as impaired on the 303(d) list, several downstream segments of Mountain Run are listed as impaired:

- If yes, what is the impairment?

VAN-E09R_MTN03A00: Extends from the Route 15/29 bridge crossing downstream until the confluence with Jonas Run.

- Aquatic Life Use – Benthic Macroinvertebrates. Two biological monitoring events in 2006 each resulted in a VSCI score which indicates an impaired macroinvertebrate community.

- Fish Consumption Use: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 12/13/04, limits American eel consumption to no more than two meals per month. The affected stretch of Mountain Run extends roughly 19 miles, from the Route 15/29 bridge crossing near Culpeper City downstream until the confluence with the Rappahannock River.

VAN-E09R_MTN02A04: Extends from the confluence with Jonas Run downstream until the confluence with Flat Run.

- Aquatic Life Use – Benthic Macroinvertebrates: The impairment is based on benthic macroinvertebrate biological monitoring at immediate upstream (3-MTN018.83) and downstream (3-MTN003.31) stations.

- Fish Consumption Use: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 12/13/04, limits American eel consumption to no more than two meals per month. The affected stretch of Mountain Run extends roughly 19 miles, from the Route 15/29 bridge crossing near Culpeper City downstream until the confluence with the Rappahannock River.

VAN-E09R_MTN01A00: Extends from the confluence with Flat Run downstream until the confluence with the Rappahannock River.

- Aquatic Life Use – Benthic Macroinvertebrates: A total of three biological monitoring events in 2003 and 2004 resulted in a VSCI score which indicates an impaired macroinvertebrate community.

- Fish Consumption Use: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 12/13/04, limits American eel consumption to no more than two meals per month. The affected stretch of Mountain Run extends roughly 19 miles, from the Route 15/29 bridge crossing near Culpeper City downstream until the confluence with the Rappahannock River.

- Recreational Use: Sufficient excursions from the instantaneous E. coli bacteria criterion (6 of 16 samples - 37.5%) were recorded at DEQ's ambient water quality monitoring station (3-MTN000.59) at the Route 620 crossing to assess this stream

segment as not supporting of the recreation use goal for the 2008 water quality assessment. The segment was previously listed for a fecal coliform bacteria impairment, from 1996 through 2006. The E. coli bacteria impairment was first listed in 2006.

- Has the TMDL been prepared?

  Recreation Use Impairment – Yes. Approved by EPA on 04/27/2001.
  Aquatic Life Use Impairment – No
  Fish Consumption Impairment – No

- If yes, what is the WLA for the discharge?

  The Mountain Run TMDL is currently being modified. If the proposed modification is accepted by EPA, VA0061590 will be given a WLA of ***3.23E+12 cfu/year of E. coli*** *bacteria. This is equivalent to discharging at their maximum permitted design flow (6.0 MGD) with a permitted limit for E. coli at 39 cfu/100mL.*

- If no, what is the schedule for the TMDL?

  Aquatic Life Use Impairment – TMDL Due by 2020.
  Fish Consumption Impairment – TMDL Due by 2018.

3. If the answer to (2) above is no, is there a downstream 303(d) listed impairment?

N/A

- If yes, what is the impairment?

  N/A

- Has a TMDL been prepared?

  N/A

- Will the TMDL include the receiving stream?

  N/A

- Is there a WLA for the discharge?

  N/A

- What is the schedule for the TMDL?

  N/A

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?
Not at this time.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Culpeper WWCF Permit No.: VA0061590

Receiving Stream: Mountain Run Version: OWP Guidance Memo 00-2011 (8/24/00)

Attachment 5

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	66.6 mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	66.6 mg/L
90% Temperature (Annual) =	25 deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	25 deg C
90% Temperature (Wet season) =	20 deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	20 deg C
90% Maximum pH =	7.25 SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.25 SU
10% Maximum pH =	6.3 SU	30Q10 (Wet season)	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	6.3 SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	4 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	H
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E
Ammonia-N (mg/l) (Yearly)	0	2.79E+01	2.66E+00	na	--	2.8E+01	2.7E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	2.7E+00	na	-
Ammonia-N (mg/l) (High Flow)	0	2.79E+01	3.68E+00	na	--	2.8E+01	3.7E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	3.7E+00	na	-
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	-
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	-
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E
Bis2-Chloroethyl Ether[C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E
Bis 2-Ethylhexyl Phthalate[C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E
Cadmium	0	2.5E+00	8.2E-01	na	--	2.5E+00	8.2E-01	na	--	--	--	--	--	--	--	--	--	2.5E+00	8.2E-01	na	-
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	-

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**H**
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	**na**	**-**
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	H
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	-
Chromium III	0	4.1E+02	5.3E+01	na	--	4.1E+02	5.3E+01	na	--	--	--	--	--	--	--	--	--	4.1E+02	5.3E+01	na	-
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	-
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	-
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E
Copper	0	9.2E+00	6.3E+00	na	--	9.2E+00	6.3E+00	na	--	--	--	--	--	--	--	--	--	9.2E+00	6.3E+00	na	-
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	-
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	-
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	-
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**H**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	**na**	**3.0E**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HI
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	7.1E+01	8.1E+00	na	--	7.1E+01	8.1E+00	na	--	--	--	--	--	--	--	--	--	7.1E+01	8.1E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.3E+02	1.4E+01	na	4.6E+03	1.3E+02	1.4E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.3E+02	1.4E+01	na	4.6E
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E
Pentachlorophenol [C]	0	4.3E+00	3.3E+00	na	3.0E+01	4.3E+00	3.3E+00	na	3.0E+01	--	--	--	--	--	--	--	--	4.3E+00	3.3E+00	na	3.0E
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+**
Silver	0	1.7E+00	--	na	--	1.7E+00	--	na	--	--	--	--	--	--	--	--	--	**1.7E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E+**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E+**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+**
Zinc	0	8.3E+01	8.4E+01	na	2.6E+04	8.3E+01	8.4E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**8.3E+01**	**8.4E+01**	**na**	**2.6E+**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	4.9E-01
Chromium III	3.2E+01
Chromium VI	6.4E+00
Copper	3.7E+00
Iron	na
Lead	4.8E+00
Manganese	na
Mercury	4.6E-01
Nickel	8.6E+00
Selenium	3.0E+00
Silver	6.9E-01
Zinc	3.3E+01

Note: do not use QL's lower tha... minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Culpeper WWCF Permit No.: VA0061590

Receiving Stream: Mountain Run Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	66.6 mg/L
90% Temperature (Annual) =	25 deg C
90% Temperature (Wet season) =	20 deg C
90% Maximum pH =	7.25 SU
10% Maximum pH =	6.3 SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	y

Stream Flows

1Q10 (Annual) =	0 MGD
7Q10 (Annual) =	0 MGD
30Q10 (Annual) =	0 MGD
1Q10 (Wet season) =	0 MGD
30Q10 (Wet season)	0 MGD
30Q5 =	0 MGD
Harmonic Mean =	0 MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	66.6 mg/L
90% Temp (Annual) =	25 deg C
90% Temp (Wet season) =	20 deg C
90% Maximum pH =	7.25 SU
10% Maximum pH =	6.3 SU
Discharge Flow =	6 MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E
Ammonia-N (mg/l) (Yearly)	0	2.79E+01	2.66E+00	na	--	2.8E+01	2.7E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	2.7E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	2.79E+01	3.68E+00	na	--	2.8E+01	3.7E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	3.7E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8
Bis2-Chloroethyl Ether[C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E
Bis 2-Ethylhexyl Phthalate[C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E
Cadmium	0	2.5E+00	8.2E-01	na	--	2.5E+00	8.2E-01	na	--	--	--	--	--	--	--	--	--	2.5E+00	8.2E-01	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	H
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	**na**	
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	H
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	-
Chromium III	0	4.1E+02	5.3E+01	na	--	4.1E+02	5.3E+01	na	--	--	--	--	--	--	--	--	--	4.1E+02	5.3E+01	na	-
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	-
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	-
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E
Copper	0	9.2E+00	6.3E+00	na	--	9.2E+00	6.3E+00	na	--	--	--	--	--	--	--	--	--	9.2E+00	6.3E+00	na	-
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	-
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	-
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	-
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	-
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HI
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	-
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	-
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	-
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	-
Lead	0	7.1E+01	8.1E+00	na	--	7.1E+01	8.1E+00	na	--	--	--	--	--	--	--	--	--	7.1E+01	8.1E+00	na	-
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	-
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	-
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	-
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	-
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	-
Nickel	0	1.3E+02	1.4E+01	na	4.6E+03	1.3E+02	1.4E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.3E+02	1.4E+01	na	4.6E
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	-
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	-
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E
Pentachlorophenol [C]	0	4.3E+00	3.3E+00	na	3.0E+01	4.3E+00	3.3E+00	na	3.0E+01	--	--	--	--	--	--	--	--	4.3E+00	3.3E+00	na	3.0E
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E**
Silver	0	1.7E+00	--	na	--	1.7E+00	--	na	--	--	--	--	--	--	--	--	--	**1.7E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E**
Zinc	0	8.3E+01	8.4E+01	na	2.6E+04	8.3E+01	8.4E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**8.3E+01**	**8.4E+01**	**na**	**2.6E**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	4.9E-01
Chromium III	3.2E+01
Chromium VI	6.4E+00
Copper	3.7E+00
Iron	na
Lead	4.8E+00
Manganese	na
Mercury	4.6E-01
Nickel	8.6E+00
Selenium	3.0E+00
Silver	6.9E-01
Zinc	3.3E+01

Note: do not use QL's lower than minimum QL's provided in agency guidance

Mountain Run Monitoring Data
90' Downstream of Culpeper WWTP
(July 2004 - June 2006)

Annual

Temp		pH		Hardness	
7/18/05	29	7/23/04	7.44	9/23/05	112
6/30/06	25.8	8/18/04	7.27	9/21/04	92
7/23/04	25	4/30/05	7.25 90%	6/20/05	84
8/18/04	24	9/21/04	7.24	6/30/06	82
9/23/05	23.2	6/30/06	7.2	7/23/04	75
8/18/05	23	7/18/05	7.2	11/15/05	74
6/20/05	23	10/26/04	7.17	8/18/04	72
5/26/06	21.7	2/24/06	6.96	8/18/05	68
9/21/04	21	8/18/05	6.96	12/16/04	67
5/23/05	20	2/18/05	6.9	10/26/04	64
4/28/06	19.2	9/23/05	6.8	7/18/05	61
10/26/04	17	11/16/04	6.72	5/26/06	60
11/15/05	16	5/23/05	6.7	3/21/05	60
3/28/06	15.2	12/16/04	6.6	11/16/04	59
4/30/05	13	3/28/06	6.58	4/28/06	58
3/21/05	12	3/21/05	6.56	5/23/05	58
11/16/04	12	1/27/06	6.51	1/26/05	58
2/24/06	11	4/28/06	6.49	2/24/06	56
12/16/04	8	5/26/06	6.4	4/30/05	56
2/18/05	7	11/15/05	6.38	3/28/06	50
1/27/06	5.4	6/20/05	6.3 10%	1/27/06	50
1/26/05	5	1/26/05	6.11	2/18/05	50

66.63636 Average

Summer

Temp		pH	
7/18/05	29	7/23/04	7.44
6/30/06	25.8 90%	8/18/04	7.27
7/23/04	25	9/21/04	7.24
8/18/04	24	6/30/06	7.2
9/23/05	23.2	7/18/05	7.2
8/18/05	23	10/26/04	7.17
6/20/05	23	8/18/05	6.96
9/21/04	21	9/23/05	6.8
10/26/04	17	11/16/04	6.72
11/15/05	16	11/15/05	6.38
11/16/04	12	6/20/05	6.3

Winter

5/26/06	21.7	4/30/05	7.25
5/23/05	20 90%	2/24/06	6.96
4/28/06	19.2	2/18/05	6.9
3/28/06	15.2	5/23/05	6.7
4/30/05	13	12/16/04	6.6
3/21/05	12	3/28/06	6.58
2/24/06	11	3/21/05	6.56
12/16/04	8	1/27/06	6.51
2/18/05	7	4/28/06	6.49
1/27/06	5.4	5/26/06	6.4
1/26/05	5	1/26/05	6.11

9/2/2009 8:50:19 AM

Facility = Town of Culpeper 4 MGD
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 28
WLAc = 3.7
Q.L. = .2
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 7.46537934564035
Average Weekly limit = 4.45313674786387
Average Monthly LImit = 3.7

The data are:

9

9/2/2009 8:51:25 AM

Facility = Town of Culpeper 6 MGD
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 28
WLAc = 3.7
Q.L. = .2
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 7.46537934564035
Average Weekly limit = 4.45313674786387
Average Monthly LImit = 3.7

The data are:

9

9/1/2009 11:06:05 AM

Facility = Town of Culpeper
Chemical = Zinc
Chronic averaging period = 4
WLAa = 83
WLAc = 84
Q.L. = .5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 2
Expected Value = 43.55
Variance = 682.776
C.V. = 0.6
97th percentile daily values = 105.975
97th percentile 4 day average = 72.4580
97th percentile 30 day average= 52.5236
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 83
Average Weekly limit = 83
Average Monthly LImit = 83

The data are:

40.3
46.8

9/1/2009 11:03:08 AM

Facility = Town of Culpeper
Chemical = Copper
Chronic averaging period = 4
WLAa = 9.2
WLAc = 6.3
Q.L. = .3
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 2
Expected Value = 15.655
Variance = 88.2284
C.V. = 0.6
97th percentile daily values = 38.0951
97th percentile 4 day average = 26.0466
97th percentile 30 day average= 18.8807
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 9.2
Average Weekly limit = 9.2
Average Monthly LImit = 9.2

The data are:

24.3
7.01

9/30/2009 6:47:30 AM

Facility = Town of Culpeper
Chemical = Alpha Endosulfan
Chronic averaging period = 4
WLAa = 0.22
WLAc = 0.056
Q.L. = 0.1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 2
Expected Value = .116619
Variance = .004896
C.V. = 0.6
97th percentile daily values = .283782
97th percentile 4 day average = .194029
97th percentile 30 day average= .140648
< Q.L. = 1
Model used = BPJ Assumptions, Type 1 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 0.081904187906981
Average Weekly limit = 0.081904187906981
Average Monthly LImit = 0.081904187906981

The data are:

0.138
0

9/1/2009 11:01:36 AM

Facility = Town of Culpeper
Chemical = Cadmium
Chronic averaging period = 4
WLAa = 2.5
WLAc = 0.82
Q.L. = .10
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 2
Expected Value = .116619
Variance = .004896
C.V. = 0.6
97th percentile daily values = .283782
97th percentile 4 day average = .194029
97th percentile 30 day average= .140648
< Q.L. = 1
Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

0.13
0

9/1/2009 11:04:20 AM

Facility = Town of Culpeper
Chemical = Mercury
Chronic averaging period = 4
WLAa = 1.4
WLAc = 0.77
Q.L. = .0005
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 2
Expected Value = .00179
Variance = .000001
C.V. = 0.6
97th percentile daily values = .004355
97th percentile 4 day average = .002978
97th percentile 30 day average= .002158
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

0.00243
0.00115

REGIONAL MODELING SYSTEM VERSION 3.2

MODEL SIMULATION FOR THE Culpeper AWT DISCHARGE

TO Mountain Run

COMMENT: Summer 4.5 mgd

THE SIMULATION STARTS AT THE Culpeper AWT DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = 4.5 MGD cBOD5 = 8 Mg/L TKN = 3 Mg/L D.O. = 6.5 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.10000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.559 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	5.10	0.382	3.529	0.500	0.100	0.000	300.00	23.90	8.399

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

TOTAL STREAMFLOW = 4.6000 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.523	19.674	0.000
0.100	0.100	6.454	19.486	0.000
0.200	0.200	6.391	19.301	0.000
0.300	0.300	6.333	19.117	0.000
0.400	0.400	6.281	18.935	0.000
0.500	0.500	6.233	18.755	0.000
0.600	0.600	6.190	18.576	0.000
0.700	0.700	6.151	18.399	0.000
0.800	0.800	6.116	18.224	0.000
0.900	0.900	6.085	18.050	0.000
1.000	1.000	6.057	17.878	0.000
1.100	1.100	6.033	17.708	0.000
1.200	1.200	6.011	17.540	0.000
1.300	1.300	5.993	17.373	0.000
1.400	1.400	5.977	17.207	0.000
1.500	1.500	5.964	17.043	0.000
1.600	1.600	5.952	16.881	0.000
1.700	1.700	5.944	16.720	0.000
1.800	1.800	5.937	16.561	0.000
1.900	1.900	5.932	16.403	0.000
2.000	2.000	5.928	16.247	0.000
2.100	2.100	5.927	16.092	0.000
2.200	2.200	5.927	15.939	0.000
2.300	2.300	5.928	15.787	0.000
2.400	2.400	5.931	15.637	0.000
2.500	2.500	5.935	15.488	0.000
2.600	2.600	5.939	15.341	0.000
2.700	2.700	5.946	15.194	0.000
2.800	2.800	5.953	15.050	0.000
2.900	2.900	5.961	14.906	0.000
3.000	3.000	5.969	14.764	0.000
3.100	3.100	5.979	14.624	0.000
3.200	3.200	5.989	14.485	0.000
3.300	3.300	6.000	14.347	0.000
3.400	3.400	6.012	14.210	0.000
3.500	3.500	6.024	14.075	0.000
3.600	3.600	6.037	13.941	0.000
3.700	3.700	6.050	13.808	0.000
3.800	3.800	6.063	13.677	0.000
3.900	3.900	6.077	13.546	0.000
4.000	4.000	6.092	13.417	0.000
4.100	4.100	6.107	13.290	0.000
4.200	4.200	6.122	13.163	0.000
4.300	4.300	6.137	13.038	0.000
4.400	4.400	6.152	12.913	0.000
4.500	4.500	6.168	12.790	0.000
4.600	4.600	6.184	12.668	0.000
4.700	4.700	6.200	12.548	0.000
4.800	4.800	6.216	12.428	0.000

4.900	4.900	6.232	12.310	
5.000	5.000	6.249	12.193	0.000
5.100	5.100	6.265	12.077	0.000

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
10-26-1998 08:58:57

DATA FILE = SUMMER45.MOD

****

REGIONAL MODELING SYSTEM VERSION 3.2

DATA FILE SUMMARY

****

THE NAME OF THE DATA FILE IS: WINTER45.MOD

Winter @ 4.5 MGD

THE STREAM NAME IS: Mountain Run
THE RIVER BASIN IS: Rappahannock River
THE SECTION NUMBER IS: 4
THE CLASSIFICATION IS: III

STANDARDS VIOLATED (Y/N) = N
STANDARDS APPROPRIATE (Y/N) = Y

DISCHARGE WITHIN 3 MILES (Y/N) = N

THE DISCHARGE BEING MODELED IS: Culpeper AWT

PROPOSED LIMITS ARE:
FLOW = 4.5 MGD
BOD5 = 15 MG/L
TKN = 8 MG/L
D.O. = 6.5 MG/L

THE NUMBER OF SEGMENTS TO BE MODELED = 1

7Q10 WILL BE CALCULATED BY: DRAINAGE AREA COMPARISON
THE GAUGE NAME IS: See Paul Herman's Memo
GAUGE DRAINAGE AREA = 36.19 SQ.MI.
GAUGE 7Q10 = 4.03 MGD
DRAINAGE AREA AT DISCHARGE = 36.19 SQ.MI.

STREAM A DRY DITCH AT DISCHARGE (Y/N) = N
ANTIDEGRADATION APPLIES (Y/N) = N

ALLOCATION DESIGN TEMPERATURE = 19.8 °C

```
          SEGMENT INFORMATION

  #######    SEGMENT #  1     #######

SEGMENT ENDS BECAUSE: THE MODEL ENDS

SEGMENT LENGTH =  5.1  MI

SEGMENT WIDTH    =  25  FT
SEGMENT DEPTH    =  .94  FT
SEGMENT VELOCITY =  .56  FT/SEC

DRAINAGE AREA AT SEGMENT START =  36.19  SQ.MI.
DRAINAGE AREA AT SEGMENT END   =  44.51  SQ.MI.

ELEVATION AT UPSTREAM END   =  315  FT
ELEVATION AT DOWNSTREAM END =  285  FT

THE CROSS SECTION IS: RECTANGULAR
THE CHANNEL IS: MODERATELY MEANDERING

POOLS AND RIFFLES (Y/N) = Y
    THE SEGMENT LENGTH IS  50  % POOLS
      POOL DEPTH =  1.4  FT
    THE SEGMENT LENGTH IS  50  % RIFFLES
      RIFFLE DEPTH =  .4  FT

THE BOTTOM TYPE = GRAVEL
SLUDGE DEPOSITS = NONE
AQUATIC PLANTS = FEW
ALGAE OBSERVED = VISIBLE ONLY ON EDGES
WATER COLORED GREEN (Y/N) = N


**********************************************************************************

REGIONAL MODELING SYSTEM      Ver 3.2    (OWRM - 9/90)
10-26-1998    09:13:42
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REGIONAL MODELING SYSTEM VERSION 3.2

MODEL SIMULATION FOR THE Culpeper AWT DISCHARGE

TO Mountain Run

COMMENT: Winter 4.5 mgd

THE SIMULATION STARTS AT THE Culpeper AWT DISCHARGE

PROPOSED PERMIT LIMITS

FLOW = 4.5 MGD cBOD5 = 15 Mg/L TKN = 8 Mg/L D.O. = 6.5 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.021 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

BACKGROUND CONDITIONS

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 4.03000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 8.132 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

MODEL PARAMETERS

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	5.10	0.486	3.529	0.700	0.200	0.000	300.00	19.80	9.035

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

 Attachment

TOTAL STREAMFLOW = 8.5300 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	7.271	22.145	11.422
0.100	0.100	7.131	21.953	11.393
0.200	0.200	7.000	21.763	11.365
0.300	0.300	6.875	21.574	11.337
0.400	0.400	6.758	21.386	11.309
0.500	0.500	6.647	21.201	11.281
0.600	0.600	6.543	21.017	11.253
0.700	0.700	6.445	20.834	11.225
0.800	0.800	6.353	20.653	11.198
0.900	0.900	6.266	20.474	11.170
1.000	1.000	6.185	20.296	11.142
1.100	1.100	6.109	20.120	11.115
1.200	1.200	6.037	19.945	11.087
1.300	1.300	5.971	19.772	11.060
1.400	1.400	5.909	19.601	11.032
1.500	1.500	5.850	19.430	11.005
1.600	1.600	5.796	19.262	10.978
1.700	1.700	5.746	19.094	10.951
1.800	1.800	5.700	18.929	10.924
1.900	1.900	5.656	18.764	10.897
2.000	2.000	5.617	18.601	10.870
2.100	2.100	5.580	18.440	10.843
2.200	2.200	5.546	18.280	10.816
2.300	2.300	5.516	18.121	10.789
2.400	2.400	5.488	17.964	10.763
2.500	2.500	5.462	17.808	10.736
2.600	2.600	5.439	17.653	10.710
2.700	2.700	5.419	17.500	10.683
2.800	2.800	5.401	17.348	10.657
2.900	2.900	5.385	17.198	10.630
3.000	3.000	5.371	17.048	10.604
3.100	3.100	5.359	16.900	10.578
3.200	3.200	5.348	16.754	10.552
3.300	3.300	5.340	16.608	10.526
3.400	3.400	5.333	16.464	10.500
3.500	3.500	5.327	16.321	10.474
3.600	3.600	5.324	16.179	10.448
3.700	3.700	5.321	16.039	10.422
3.800	3.800	5.320	15.900	10.396
3.900	3.900	5.321	15.762	10.370
4.000	4.000	5.322	15.625	10.345
4.100	4.100	5.325	15.489	10.319
4.200	4.200	5.329	15.355	10.294
4.300	4.300	5.333	15.222	10.268
4.400	4.400	5.339	15.089	10.243
4.500	4.500	5.346	14.958	10.217
4.600	4.600	5.354	14.828	10.192
4.700	4.700	5.362	14.700	10.167
4.800	4.800	5.371	14.572	10.142

4.900	900	5.381	14.446
5.000	5.000	5.392	14.320
5.100	5.100	5.403	14.196

10.092
10.067

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
10-26-1998 09:13:55

DATA FILE = WINTER45.MOD

6.0 - 1.25 - 1.25(3)

"Model Run For U:\Water Permits\VPDES Program\Facility Archive\Mountain Run STP (VA0090212)\2006 Modification\Model\6.0 - 1.25 - 1.25 (3).mod On 8/21/2006 10:37:05 AM"

SUMMER
Town @ 6.0 MGD
High School @ 1.25 MGD
Mountain Run @ 1.25 MGD

"Model is for MOUNTAIN RUN."
"Model starts at the TOWN OF CULPEPER AWT discharge."

"Background Data"

"7Q10"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.1,	2,	0,	7.073,	28

"Discharge/Tributary Input Data for Segment 1"

"Flow"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
6,	8,	3,	,6.5,	28

"Hydraulic Information for Segment 1"

"Length"	"Width"	"Depth"	"Velocity"
"(mi)"	"(ft)"	"(ft)"	"(ft/sec)"
2,	38,	.7,	.3

"Initial Mix Values for Segment 1"

"Flow"	"DO"	"cBOD"	"nBOD"	"DOSat"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
6.1,	6.509,	19.754,	0,	7.862,	28

"Rate Constants for Segment 1. - (All units Per Day)"

"k1"	"k1@T"	"k2"	"k2@T"	"kn"	"kn@T"	"BD"	"BD@T"
.5,	.722,	6,	7.254,	.1,	.185,	0,	0

"Output for Segment 1"
"Segment starts at TOWN OF CULPEPER AWT"

"Total" "Dist." "(mi)"	"Segm." "Dist." "(mi)"	"DO" "(mg/l)"	"cBOD" "(mg/l)"	"nBOD" "(mg/l)"
0,	0,	6.509,	19.754,	0
.1,	.1,	6.427,	19.466,	0
.2,	.2,	6.36,	19.182,	0
.3,	.3,	6.306,	18.902,	0
.4,	.4,	6.263,	18.626,	0
.5,	.5,	6.23,	18.354,	0
.6,	.6,	6.205,	18.086,	0
.7,	.7,	6.187,	17.822,	0
.8,	.8,	6.175,	17.562,	0
.9,	.9,	6.168,	17.306,	0
1,	1,	6.166,	17.053,	0
1.1,	1.1,	6.168,	16.804,	0
1.2,	1.2,	6.173,	16.559,	0
1.3,	1.3,	6.18,	16.317,	0
1.4,	1.4,	6.19,	16.079,	0
1.5,	1.5,	6.201,	15.844,	0
1.6,	1.6,	6.214,	15.613,	0
1.7,	1.7,	6.229,	15.385,	0
1.8,	1.8,	6.245,	15.16,	0
1.9,	1.9,	6.261,	14.939,	0
2,	2,	6.278,	14.721,	0

"Discharge/Tributary Input Data for Segment 2"

"Flow"	"cBOD5"	"TKN"	"DO"	"Temp"

6.0 - 1.25 - 1.25(3)

"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
1.25,	8,	3,	,6.5,	28

"Incremental Flow Input Data for Segment 2"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
.032,	2,	0,	,7.085,	28

"Hydraulic Information for Segment 2"

"Length",	"Width",	"Depth",	"Velocity"
"(mi)",	"(ft)",	"(ft)",	"(ft/sec)"
5,	38,	.9,	.3

"Initial Mix Values for Segment 2"

"Flow",	"DO",	"cBOD",	"nBOD",	"DOSat",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
7.382,	6.319,	15.573,	0,	7.872,	28

"Rate Constants for Segment 2. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
.5,	.722,	6,	7.254,	.1,	.185,	0,	0

"Output for Segment 2"
"Segment starts at HIGH SCHOOL WWTP"

"Total" "Dist.",	"Segm." "Dist.",	"DO",	"cBOD",	"nBOD"
"(mi)",	"(mi)",	"(mg/l)",	"(mg/l)",	"(mg/l)"
2,	0,	6.319,	15.573,	0
2.1,	.1,	6.321,	15.346,	0
2.2,	.2,	6.326,	15.122,	0
2.3,	.3,	6.333,	14.901,	0
2.4,	.4,	6.342,	14.683,	0
2.5,	.5,	6.353,	14.469,	0
2.6,	.6,	6.365,	14.258,	0
2.7,	.7,	6.378,	14.05,	0
2.8,	.8,	6.393,	13.845,	0
2.9,	.9,	6.408,	13.643,	0
3,	1,	6.424,	13.444,	0
3.1,	1.1,	6.44,	13.248,	0
3.2,	1.2,	6.457,	13.055,	0
3.3,	1.3,	6.474,	12.864,	0
3.4,	1.4,	6.491,	12.676,	0
3.5,	1.5,	6.509,	12.491,	0
3.6,	1.6,	6.527,	12.309,	0
3.7,	1.7,	6.545,	12.129,	0
3.8,	1.8,	6.563,	11.952,	0
3.9,	1.9,	6.581,	11.778,	0
4,	2,	6.598,	11.606,	0
4.1,	2.1,	6.615,	11.437,	0
4.2,	2.2,	6.632,	11.27,	0
4.3,	2.3,	6.649,	11.105,	0
4.4,	2.4,	6.666,	10.943,	0
4.5,	2.5,	6.683,	10.783,	0
4.6,	2.6,	6.7,	10.626,	0
4.7,	2.7,	6.717,	10.471,	0
4.8,	2.8,	6.734,	10.318,	0
4.9,	2.9,	6.75,	10.167,	0
5,	3,	6.766,	10.019,	0
5.1,	3.1,	6.782,	9.873,	0
5.2,	3.2,	6.798,	9.729,	0
5.3,	3.3,	6.813,	9.587,	0
5.4,	3.4,	6.828,	9.447,	0
5.5,	3.5,	6.843,	9.309,	0

5.6,	3.6,	6.858,	9.173,	0
5.7,	3.7,	6.873,	9.039,	0
5.8,	3.8,	6.888,	8.907,	0
5.9,	3.9,	6.902,	8.777,	0
6,	4,	6.916,	8.649,	0
6.1,	4.1,	6.93,	8.523,	0
6.2,	4.2,	6.944,	8.399,	0
6.3,	4.3,	6.957,	8.276,	0
6.4,	4.4,	6.97,	8.155,	0
6.5,	4.5,	6.983,	8.036,	0
6.6,	4.6,	6.996,	7.919,	0
6.7,	4.7,	7.009,	7.803,	0
6.8,	4.8,	7.022,	7.689,	0
6.9,	4.9,	7.034,	7.577,	0
7,	5,	7.046,	7.466,	0

"Discharge/Tributary Input Data for Segment 3"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
1.25,	8,	3,	,6.5,	28

"Incremental Flow Input Data for Segment 3"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
.203,	2,	0,	,7.093,	28

"Hydraulic Information for Segment 3"

"Length",	"Width",	"Depth",	"Velocity"
"(mi)",	"(ft)",	"(ft)",	"(ft/sec)"
1.5,	38,	1,	.3

"Initial Mix Values for Segment 3"

"Flow",	"DO",	"cBOD",	"nBOD",	"DOSat",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
8.835,	6.97,	9.183,	0,	7.881,	28

"Rate Constants for Segment 3. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
.3,	.433,	6,	7.254,	.1,	.185,	0,	0

"Output for Segment 3"
"Segment starts at MOUNTAIN RUN WWTP"

"Total" "Dist."	"Segm." "Dist."	"DO",	"cBOD",	"nBOD"
"(mi)",	"(mi)",	"(mg/l)",	"(mg/l)",	"(mg/l)"
7,	0,	6.97,	9.183,	0
7.1,	.1,	7.02,	9.102,	0
7.2,	.2,	7.064,	9.022,	0
7.3,	.3,	7.093,	8.943,	0
7.4,	.4,	7.093,	8.864,	0
7.5,	.5,	7.093,	8.786,	0
7.6,	.6,	7.093,	8.709,	0
7.7,	.7,	7.093,	8.632,	0
7.8,	.8,	7.093,	8.556,	0
7.9,	.9,	7.093,	8.481,	0
8,	1,	7.093,	8.406,	0
8.1,	1.1,	7.093,	8.332,	0
8.2,	1.2,	7.093,	8.259,	0
8.3,	1.3,	7.093,	8.186,	0
8.4,	1.4,	7.093,	8.114,	0

6.0 - 1.25 - 1.25(3)

8.5, 1.5, 7.093, 8.043, 0

"END OF FILE"

6.0 - 1.25 - 1.25 (4) Seasonal

"***SEASONAL RUN***"
"Wet Season is from December to May."
"Model Run For U:\Water Permits\VPDES Program\Facility Archive\Mountain Run STP (VA0090212)\2006 Modification\Model\6.0 - 1.25 - 1.25 (3).mod On 9/25/2006 11:40:27 AM"

"Model is for MOUNTAIN RUN."
"Model starts at the TOWN OF CULPEPER AWT discharge."

WINTER
Town @ 6.0 MGD
High School @ 1.25 MGD
Mountain Run @ 1.25 MGD

"Background Data"

"7Q10"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
4.152,	2,	0,	8.091,	20

"Discharge/Tributary Input Data for Segment 1"

"Flow"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
6,	12,	8,	,6.5,	20

"Hydraulic Information for Segment 1"

"Length"	"Width"	"Depth"	"Velocity"
"(mi)"	"(ft)"	"(ft)"	"(ft/sec)"
2,	38,	8.959033,	4.613949E-02

"Initial Mix Values for Segment 1"

"Flow"	"DO"	"cBOD"	"nBOD"	"DOSat"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
10.152,	7.151,	19.775,	12.796,	8.993,	20

"Rate Constants for Segment 1. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
.5,	.5,	6,	6,	.2,	.2,	0,	0

"Output for Segment 1"
"Segment starts at TOWN OF CULPEPER AWT"

"Total" "Dist."	"Segm." "Dist."	"DO"	"cBOD"	"nBOD"
"(mi)"	"(mi)"	"(mg/l)"	"(mg/l)"	"(mg/l)"
0,	0,	7.151,	19.775,	12.796
.1,	.1,	7.06,	18.508,	12.461
.2,	.2,	7.081,	17.322,	12.135
.3,	.3,	7.148,	16.212,	11.818
.4,	.4,	7.233,	15.173,	11.509
.5,	.5,	7.323,	14.201,	11.208
.6,	.6,	7.412,	13.291,	10.915
.7,	.7,	7.497,	12.439,	10.63
.8,	.8,	7.578,	11.642,	10.352
.9,	.9,	7.655,	10.896,	10.081
1,	1,	7.728,	10.198,	9.817
1.1,	1.1,	7.796,	9.545,	9.56
1.2,	1.2,	7.86,	8.933,	9.31
1.3,	1.3,	7.92,	8.361,	9.067
1.4,	1.4,	7.977,	7.825,	8.83
1.5,	1.5,	8.031,	7.324,	8.599
1.6,	1.6,	8.081,	6.855,	8.374
1.7,	1.7,	8.094,	6.416,	8.155
1.8,	1.8,	8.094,	6.005,	7.942
1.9,	1.9,	8.094,	5.62,	7.734
2,	2,	8.094,	5.26,	7.532

"Discharge/Tributary Input Data for Segment 2"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
1.25,	12,	8,	,6.5,	20

"Incremental Flow Input Data for Segment 2"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
1.32864,	2,	0,	,8.104,	20

"Hydraulic Information for Segment 2"

"Length",	"Width",	"Depth",	"Velocity"
"(mi)",	"(ft)",	"(ft)",	"(ft/sec)"
5,	38,	11.51876,	4.500149E-02

"Initial Mix Values for Segment 2"

"Flow",	"DO",	"cBOD",	"nBOD",	"DOSat",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
12.7306,	7.939,	7.662,	8.132,	9.004,	20

"Rate Constants for Segment 2. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
.3,	.3,	6,	6,	.15,	.15,	0,	0

"Output for Segment 2"
"Segment starts at HIGH SCHOOL WWTP"

"Total", "Segm."				
"Dist.",	"Dist.",	"DO",	"cBOD",	"nBOD"
"(mi)",	"(mi)",	"(mg/l)",	"(mg/l)",	"(mg/l)"
2,	0,	7.939,	7.662,	8.132
2.1,	.1,	8.104,	7.356,	7.968
2.2,	.2,	8.104,	7.062,	7.807
2.3,	.3,	8.104,	6.78,	7.65
2.4,	.4,	8.104,	6.509,	7.496
2.5,	.5,	8.104,	6.249,	7.345
2.6,	.6,	8.104,	6,	7.197
2.7,	.7,	8.104,	5.76,	7.052
2.8,	.8,	8.104,	5.53,	6.91
2.9,	.9,	8.104,	5.309,	6.771
3,	1,	8.104,	5.097,	6.634
3.1,	1.1,	8.104,	5,	6.5
3.2,	1.2,	8.104,	5,	6.369
3.3,	1.3,	8.104,	5,	6.241
3.4,	1.4,	8.104,	5,	6.115
3.5,	1.5,	8.104,	5,	5.992
3.6,	1.6,	8.104,	5,	5.871
3.7,	1.7,	8.104,	5,	5.753
3.8,	1.8,	8.104,	5,	5.637
3.9,	1.9,	8.104,	5,	5.523
4,	2,	8.104,	5,	5.412
4.1,	2.1,	8.104,	5,	5.303
4.2,	2.2,	8.104,	5,	5.196
4.3,	2.3,	8.104,	5,	5.091
4.4,	2.4,	8.104,	5,	4.988
4.5,	2.5,	8.104,	5,	4.887
4.6,	2.6,	8.104,	5,	4.788
4.7,	2.7,	8.104,	5,	4.691
4.8,	2.8,	8.104,	5,	4.596
4.9,	2.9,	8.104,	5,	4.503
5,	3,	8.104,	5,	4.412
5.1,	3.1,	8.104,	5,	4.323
5.2,	3.2,	8.104,	5,	4.236
5.3,	3.3,	8.104,	5,	4.151

5.4,	3.4,	8.104,	5,	4.067
5.5,	3.5,	8.104,	5,	3.985
5.6,	3.6,	8.104,	5,	3.905
5.7,	3.7,	8.104,	5,	3.826
5.8,	3.8,	8.104,	5,	3.749
5.9,	3.9,	8.104,	5,	3.673
6,	4,	8.104,	5,	3.599
6.1,	4.1,	8.104,	5,	3.526
6.2,	4.2,	8.104,	5,	3.455
6.3,	4.3,	8.104,	5,	3.385
6.4,	4.4,	8.104,	5,	3.317
6.5,	4.5,	8.104,	5,	3.25
6.6,	4.6,	8.104,	5,	3.184
6.7,	4.7,	8.104,	5,	3.12
6.8,	4.8,	8.104,	5,	3.057
6.9,	4.9,	8.104,	5,	2.995
7,	5,	8.104,	5,	2.935

"Discharge/Tributary Input Data for Segment 3"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
1.25,	12,	8,	,6.5,	20

"Incremental Flow Input Data for Segment 3"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
8.42856,	2,	0,	,8.113,	20

"Hydraulic Information for Segment 3"

"Length",	"Width",	"Depth",	"Velocity"
"(mi)",	"(ft)",	"(ft)",	"(ft/sec)"
1.5,	38,	12.79862,	7.129277E-02

"Initial Mix Values for Segment 3"

"Flow",	"DO",	"cBOD",	"nBOD",	"DOSat",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
22.4092,	8.018,	6.395,	2.875,	9.015,	20

"Rate Constants for Segment 3. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
.3,	.3,	6,	6,	.1,	.1,	0,	0

"Output for Segment 3"
"Segment starts at MOUNTAIN RUN WWTP"

"Total", "Segm."				
"Dist.",	"Dist.",	"DO",	"cBOD",	"nBOD"
"(mi)",	"(mi)",	"(mg/l)",	"(mg/l)",	"(mg/l)"
7,	0,	8.018,	6.395,	2.875
7.1,	.1,	8.113,	6.233,	2.85
7.2,	.2,	8.113,	6.075,	2.826
7.3,	.3,	8.113,	5.921,	2.802
7.4,	.4,	8.113,	5.771,	2.778
7.5,	.5,	8.113,	5.624,	2.754
7.6,	.6,	8.113,	5.481,	2.73
7.7,	.7,	8.113,	5.342,	2.707
7.8,	.8,	8.113,	5.206,	2.684
7.9,	.9,	8.113,	5.074,	2.661
8,	1,	8.113,	5,	2.638
8.1,	1.1,	8.113,	5,	2.615
8.2,	1.2,	8.113,	5,	2.593

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                                    6.0 - 1.25 - 1.25 (4) Seasonal
8.3,      1.3,      8.113,     5,          2.571
8.4,      1.4,      8.113,     5,          2.549
8.5,      1.5,      8.113,     5,          2.527


"END OF FILE"
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Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 01/10/05
File: WETLIM10.xls
(MIX.EXE required also)

Acute Endpoint/Permit Limit — **Use as LC_{50} in Special Condition, as TUa on DMR**

ACUTE 100% = NOAEC — LC_{50} = NA % Use as NA TUa

ACUTE WLAa 0.3035 — Note: Inform the permittee that if the mean of the data exceeds this TUa: 1.0 a limit may result using WLA.EXE

Chronic Endpoint/Permit Limit — **Use as NOEC in Special Condition, as TUc on DMR**

CHRONIC	1.486950929 TU_c	NOEC =	68 %	Use as 1.47	TU_c
BOTH*	3.035000074 TU_c	NOEC =	33 %	Use as 3.03	TU_c
AML	1.486950929 TU_c	NOEC =	68 %	Use as 1.47	TU_c

Enter data in the cells with blue type:

Entry Date:	09/01/09
Facility Name:	Town of Culpeper WWTP
VPDES Number:	VA0061590
Outfall Number:	1

ACUTE WLAa,c 3.035
CHRONIC WLAc 1.01666667
* Both means acute expressed as chronic

Note: Inform the permittee that if the mean of the data exceeds this TUc: 1.0 a limit may result using WLA.EXE

		% Flow to be used from MIX.EXE	Difuser /modeling study?
Plant Flow:	6 MGD		Enter Y/N N
Acute 1Q10:	0.07 MGD	100 %	Acute 1 :1
Chronic 7Q10:	0.1 MGD	100 %	Chronic 1 :1

Are data available to calculate CV? (Y/N) N (Minimum of 10 data points, same species, needed) Go to Page 2
Are data available to calculate ACR? (Y/N) N (NOEC<LC50, do not use greater/less than data) Go to Page 3

IWC_a	98.84678748 %	Plant flow/plant flow + 1Q10
IWC_c	98.36065574 %	Plant flow/plant flow + 7Q10

NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use

Dilution, acute	1.011666667	100/IWCa
Dilution, chronic	1.016666667	100/IWCc

WLA_a	0.3035	Instream criterion (0.3 TUa) X's Dilution, acute
WLA_c	1.016666667	Instream criterion (1.0 TUc) X's Dilution, chronic
$WLA_{a,c}$	3.035	ACR X's WLA_a - converts acute WLA to chronic units

ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)
Constants eA	0.4109447	Default = 0.41
eB	0.6010373	Default = 0.60
eC	2.4334175	Default = 2.43
eD	2.4334175	Default = 2.43 (1 samp) No. of samples: 1

**"The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.

$LTA_{a,c}$	1.247217165	WLAa,c X's eA						
LTA_c	0.611054588	WLAc X's eB				Rounded NOEC's		%
MDL** with $LTA_{a,c}$	3.035000074	TU_c	NOEC =	32.948928	(Protects from acute/chronic toxicity)	NOEC =	33	%
MDL** with LTA_c	1.486950929	TU_c	NOEC =	67.251715	(Protects from chronic toxicity)	NOEC =	68	%
AML with lowest LTA	1.486950929	TU_c	NOEC =	67.251715	Lowest LTA X's eD	NOEC =	68	

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

							Rounded LC50's		%
MDL with $LTA_{a,c}$	0.303500007	TU_a	LC50 =	329.489284 %	Use NOAEC=100%	LC50 =	NA		%
MDL with LTA_c	0.148695093	TU_a	LC50 =	672.517149 %	Use NOAEC=100%	LC50 =	NA		

Attachment 10

Page 2 - Follow the directions to develop a site specific CV (coefficient of variation)

IF YOU HAVE AT LEAST 10 DATA POINTS THAT ARE QUANTIFIABLE (NOT "<" OR ">") FOR A SPECIES, ENTER THE DATA IN EITHER COLUMN "G" (VERTEBRATE) OR COLUMN "J" (INVERTEBRATE). THE 'CV' WILL BE PICKED UP FOR THE CALCULATIONS BELOW. THE DEFAULT VALUES FOR eA, eB, AND eC WILL CHANGE IF THE 'CV' IS ANYTHING OTHER THAN 0.6.

Coefficient of Variation for effluent tests

CV = 0.6 (Default 0.6)

δ^2 = 0.3074847

δ = 0.554513029

Using the log variance to develop eA
(P. 100, step 2a of TSD)

Z = 1.881 (97% probability stat from table

A = -0.88929666

eA = 0.410944686

Using the log variance to develop eB
(P. 100, step 2b of TSD)

δ_4^2 = 0.086177696

δ_4 = 0.293560379

B = -0.50909823

eB = 0.601037335

Using the log variance to develop eC
(P. 100, step 4a of TSD)

δ^2 = 0.3074847

δ = 0.554513029

C = 0.889296658

eC = 2.433417525

Using the log variance to develop eD
(P. 100, step 4b of TSD)

n = 1 This number will most likely stay as "1", for 1 sample/month.

δ_n^2 = 0.3074847

δ_n = 0.554513029

D = 0.889296658

eD = 2.433417525

	Vertebrate IC_{25} Data		or LC_{50} Data	LN of data	Invertebrate IC_{25} Data		or LC_{50} Data	LN of data
	**********				**********			
1	0				1	0		
2					2			
3					3			
4					4			
5					5			
6					6			
7					7			
8					8			
9					9			
10					10			
11					11			
12					12			
13					13			
14					14			
15					15			
16					16			
17					17			
18					18			
19					19			
20					20			

	St Dev	NEED DATA	NEED DATA	St Dev	NEED DATA	NEED DATA
Mean		0	0	Mean	0	0
Variance		0	0.000000	Variance	0	0.000000
CV		0		CV	0	

Page 3 - Follow directions to develop a site specific ACR (Acute to Chronic Ratio)

To determine Acute/Chronic Ratio (ACR), insert usable data below. Usable data is defined as valid paired test results, acute and chronic, tested at the same temperature, same species. The chronic NOEC must be less than the acute LC_{50}, since the ACR divides the LC_{50} by the NOEC. LC_{50}'s >100% should not be used.

Table 1. ACR using Vertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

Table 1. Result:	Vertebrate ACR	0
Table 2. Result:	Invertebrate ACR	0
	Lowest ACR	Default to 10

Table 2. ACR using Invertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

Convert LC_{50}'s and NOEC's to Chronic TU's for use in WLA.EXE

Table 3. ACR used: 10

Enter LC_{50}	TUc	Enter NOEC	TUc
1	NO DATA		NO DATA
2	NO DATA		NO DATA
3	NO DATA		NO DATA
4	NO DATA		NO DATA
5	NO DATA		NO DATA
6	NO DATA		NO DATA
7	NO DATA		NO DATA
8	NO DATA		NO DATA
9	NO DATA		NO DATA
10	NO DATA		NO DATA
11	NO DATA		NO DATA
12	NO DATA		NO DATA
13	NO DATA		NO DATA
14	NO DATA		NO DATA
15	NO DATA		NO DATA
16	NO DATA		NO DATA
17	NO DATA		NO DATA
18	NO DATA		NO DATA
19	NO DATA		NO DATA
20	NO DATA		NO DATA

If WLA.EXE determines that an acute limit is needed, you need to convert the TUc answer you get to TUa and then an LC50, enter it here:

NO DATA	$\%LC_{50}$	
NO DATA	TUa	

DILUTION SERIES TO RECOMMEND

Table 4.

	Monitoring % Effluent	Monitoring TUc	Limit % Effluent	Limit TUc
Dilution series based on data mean	100	1.0		
Dilution series to use for limit			68	1.4705882
Dilution factor to recommend:	0.5		0.8246211	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	50.0	2.00	82.5	1.21
	25.0	4.00	68.0	1.47
	12.5	8.00	56.1	1.78
	6.25	16.00	46.2	2.16
Extra dilutions if needed	3.12	32.05	38.1	2.62
	1.56	64.10	31.4	3.18

Cell: I9
Comment:
This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: K18
Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: J22
Comment: Remember to change the "N" to "Y" if you have ratios entered, otherwise, they won't be used in the calculations.

Cell: C40
Comment:
If you have entered data to calculate an ACR on page 3, and this is still defaulted to "10", make sure you have selected "Y" in cell E21

Cell: C41
Comment: If you have entered data to calculate an effluent specific CV on page 2, and this is still defaulted to "0.6", make sure you have selected "Y" in cell E20

Cell: L48
Comment:
See Row 151 for the appropriate dilution series to use for these NOEC's

Cell: G62
Comment:
Vertebrates are:
Pimephales promelas
Oncorhynchus mykiss
Cyprinodon variegatus

Cell: J62
Comment:
Invertebrates are:
Ceriodaphnia dubia
Mysidopsis bahia

Cell: C117
Comment: Vertebrates are:

Pimephales promelas
Cyprinodon variegatus

Cell: M119
Comment: The ACR has been picked up from cell C34 on Page 1. If you have paired data to calculate an ACR, enter it in the tables to the left, and make sure you have a "Y" in cell E21 on Page 1. Otherwise, the default of 10 will be used to convert your acute data.

Cell: M121
Comment: If you are only concerned with acute data, you can enter it in the NOEC column for conversion and the number calculated will be equivalent to the TUa. The calculation is the same: 100/NOEC = TUc or 100/LC50 = TUa.

Cell: C138
Comment: Invertebrates are:

Ceriodaphnia dubia
Mysidopsis bahia

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Culpeper County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2009 to 5:00 p.m. on XXX, 2009

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – [Wastewater] issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Town of Culpeper, 400 South Main Street, Culpeper, VA 22701 VA0061590

NAME AND ADDRESS OF FACILITY: Town of Culpeper WPCF, 15108 Service Lane, Culpeper, VA 22701

PROJECT DESCRIPTION: The Town of Culpeper has applied for a reissuance of a permit for the public Town of Culpeper WPCF. The applicant proposes to release treated sewage wastewaters from residential areas and treated industrial wastewaters at a rate of 4.0 million gallons per day, with expansion to 6.0 million gallons per day into a water body. Sludge from the treatment process will be land applied by an approved contractor. The facility proposes to release the treated sewage wastewater in Mountain Run in Culpeper County in the Rappahannock watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, cBOD, BOD, Ammonia as Nitrogen, TKN, Total Suspended Solids, Dissolved Oxygen, E. coli, Total Nitrogen, Total Phosphorus, and a Whole Effluent Toxicity Limit. Monitoring is included for Dissolved Copper, Dissolved Zinc, Total Hardness, and Alpha-Endosulfan.

This facility is subject to the requirements of 9 VAC 25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Alison Thompson
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3834 E-mail: alison.thompson@deq.virginia.gov Fax: (703) 583-3821

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Town of Culpeper WPCF
NPDES Permit Number:	VA0061590
Permit Writer Name:	Alison Thompson
Date:	September 9, 2009

Major [X] **Minor** [ ] **Industrial** [ ] **Municipal** [X]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?	X		
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?	X		
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?	X		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?	X		
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?	X		
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs
(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	**Yes**	**No**	**N/A**
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	**Yes**	**No**	**N/A**
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)	**Yes**	**No**	**N/A**
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	**Yes**	**No**	**N/A**
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?	X		
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?	X		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?	X		

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the "Nine Minimum Controls"?			X
b. Does the permit require development and implementation of a "Long Term Control Plan"?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

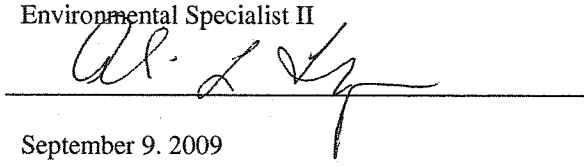
List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance
	Monitoring and records	Transfers
Duty to mitigate	Signatory requirement	Monitoring reports
Proper O & M	Bypass	Compliance schedules
Permit actions	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Alison Thompson
Title	Environmental Specialist II
Signature	
Date	September 9. 2009

Phone: 804.775.1000
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www.mcguirewoods.com

David E. Evans
Direct: 1.804.775.4317

McGUIREWOODS

devans@mcguirewoods.com
Direct Fax: 1.804.698.2049

August 24, 2010

BY HAND DELIVERY

Mr. Alan E. Pollock
Office of Water Quality Programs
Department of Environmental Quality
Commonwealth of Virginia
629 East Main Street
Richmond, VA 23219

Mr. John M. Kennedy
Chesapeake Bay Program Office
Department of Environmental Quality
Commonwealth of Virginia
629 East Main Street
Richmond, VA 23219

Re: Culpeper Nutrient Allocation Consolidation Agreement

Dear Alan and John:

Following up on my email to you'll last week and my telephone conversation with Alan last Friday, this will confirm that the Culpeper County Board of Supervisors and the Culpeper Town Council unanimously approved the Nutrient Allocation Consolidation Agreement on August 17. An original executed copy of the Agreement is enclosed.

Based on our conference call earlier this month and with the executed Agreement now in hand, we understand that the State will show the County's Mountain Run allocations consolidated in the Town's plant when it submits its preliminary Watershed Implementation Plan to EPA on September 1.

Again, many thanks for your assistance and please let me know if you have any questions.

Sincerely,

David E. Evans

Enclosure

c: Alan Brockenbrough - DEQ
Arthur Butt - DEQ
Frank T. Bossio - County Administrator
Roy B. Thorpe, Jr. - County Attorney
Christopher D. Pomeroy

Attachment 2

NUTRIENT ALLOCATION CONSOLIDATION AGREEMENT

THIS NUTRIENT ALLOCATION CONSOLIDATION AGREEMENT (this "Agreement") made this 17th day of August, 2010, by and between the Town of Culpeper, Virginia (the "Town") and the County of Culpeper, Virginia (the "County"), both of which are political subdivisions of the Commonwealth of Virginia (each a "Party" and collectively the "Parties").

BACKGROUND

A. The Town owns and operates a publicly-owned treatment works (the "Town Plant") with which the Town currently provides or in the future may provide wastewater treatment services for municipal wastewater generated within the Town's corporate limits as of the date of this Agreement (the "Town Area") and within portions of the County beyond the Town's corporate limits as of the date of this Agreement (the "County Area").

B. The Town Plant discharges highly treated wastewater pursuant to an individual Virginia Pollutant Discharge Elimination System permit (the "VPDES Permit") issued by the Virginia Department of Environmental Quality ("DEQ") to the Town.

C. The Town Plant is also subject to the General Virginia Pollutant Discharge Elimination System Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia, 9 VAC 25-820, issued by the State Water Control Board ("SWCB") and DEQ effective January 1, 2007 and as hereafter modified or reissued from time to time (the "Watershed General Permit").

D. The Watershed General Permit authorizes the Town Plant to discharge 54,820 pounds per year ("lbs/yr") of the nutrient total nitrogen ("TN") and 4,112 lbs/yr of the nutrient total phosphorus ("TP"). In this manner, the Watershed General Permit incorporates the nutrient allocations for TN and TP in such amounts (collectively, the "Town Plant Allocations") as set forth in the SWCB's Water Quality Management Planning Regulation, 9 VAC 25-720-70.C, which are derived for this facility based on a design capacity of 4.5 million gallons per day ("MGD").

E. The County has long planned and taken steps toward the construction of a publicly-owned treatment works known as the Mountain Run Plant, which has been intended to serve the County Area.

F. The Watershed General Permit authorizes the Mountain Run Plant to discharge 18,273 lbs/yr of TN and 1,371 lbs/yr of TP. In this manner, the Watershed General Permit incorporates the nutrient allocations for TN and TP in such amounts (collectively, the "Mountain Run Plant Allocations") as set forth in the SWCB's Water Quality Management Planning Regulation, 9 VAC 25-720-70.C, which are derived for this facility based on a design capacity of 1.5 MGD.

G. The Parties recognize the inefficiencies associated with continuing to construct and operate their own separate wastewater treatment works to serve the Town Area and the County Area as well as the water quality and land use benefits of consolidating wastewater treatment in a single facility. For this reason, the Parties have agreed to consolidate treatment of their respective wastewater flows by expansion of the Town Plant in lieu of operating both of the above-referenced facilities. Consistent with this intent, the Town Plant's VPDES Permit authorizes the discharge of treated wastewater at a design flow rate of 6.0 MGD, and the Town Plant has been expanded to a capacity of 6.0 MGD and upgraded to include nutrient removal technology, all as of March 2010 at which time the Town requested a Certificate to Operate from DEQ, which has since been issued.

H. In further support of the consolidation of wastewater treatment at the Town Plant (6.0 MGD), it is also the intent of the Town and County to consolidate the Town Plant Allocations (based on 4.5 MGD) and the Mountain Run Plant Allocations (based on 1.5 MGD) on a permanent basis pursuant to the Watershed General Permit, 9 VAC 25-820-70, Part I B 3, as provided below.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants and conditions herein, and for good and valuable consideration, the receipt and sufficiency of which the Parties hereby acknowledge, the Parties agree as follows.

1. Nutrient Allocation Consolidation. The Mountain Run Plant Allocations (TN and TP) are hereby transferred to and consolidated with the Town Plant Allocations (TN and TP) subject to approval by DEQ. Such consolidation shall be effective upon approval by DEQ. By August 15, 2010 or as soon as practical thereafter, the Town and County shall jointly submit a written request to DEQ requesting DEQ's approval of such consolidation and a corresponding update to its Watershed General Permit Registration List.

2. Mutual Cooperation. The Parties shall continue to cooperate with each other in any manner reasonably necessary to accomplish or bring about the consolidation of the Mountain Run Plant Allocations with the Town Plant Allocations as provided under this Agreement.

3. No Charges. There shall be no monetary charge by either Party to the other Party for the consolidation of nutrient allocations as provided under this Agreement. Each of the Parties shall bear its own fees and expenses, including its own counsel fees, incurred in connection with this Agreement. This Agreement shall not be interpreted as establishing an obligation on the Town to provide wastewater facilities or services for the benefit of the County or its residents, it being the intent of the Parties that such obligations and charges related to such facilities and services are to be established by separate agreement(s).

4. Authorization. Each Party represents that its execution, delivery and performance under this Agreement have been duly authorized by all necessary action on its behalf, and do not and will not violate any provision of its charter or result in a material breach of or constitute a material default under any agreement, indenture, or instrument of which it is a party or by which

it or its properties may be bound or affected. To each Party's knowledge there are no actions, suits or proceedings pending or threatened against such Party or any of its properties, before any court or governmental authority that, if determined adversely to such Party, would have a material adverse effect on the transactions contemplated by this Agreement.

5. No Third Party Beneficiaries. This Agreement is solely for the benefit of the Parties hereto and their permitted successors and assignees and shall not confer any rights or benefits on any other person.

6. No Assignment. This Agreement, and the rights and privileges granted to the Parties pursuant to this Agreement, shall be binding upon and inure to the benefit of any successors of such Parties. Neither Party may transfer or assign this Agreement, or its rights or obligations hereunder, without the prior written consent of the other Party, which consent may be withheld in such Party's discretion.

7. Governing Law; Severability. This Agreement shall be construed in accordance with and governed for all purposes by the laws of the Commonwealth of Virginia. If any word or provision of this Agreement as applied to any Party or to any circumstance is adjudged by a court to be invalid or unenforceable, the same shall in no way affect any other circumstance or the validity or enforceability of any other word or provision.

8. Change in Law. In the event of any material change in applicable laws or regulations, the Parties shall work together to amend this Agreement to conform to such change, while maintaining as closely as practical the provisions and intent of this Agreement.

9. Entire Agreement; Amendments. This Agreement contains the entire agreement between the Parties as to the subject matter hereof and supersedes all previous written and oral negotiations, commitments, proposals and writings as to the consolidation of Mountain Run Plant Allocations with the Town Plant Allocations. No amendments may be made to this Agreement except by a writing signed by both Parties.

10. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties hereto have caused the execution of this Agreement as of the date first written above.

[SIGNATURES ON NEXT PAGE]

TOWN OF CULPEPER, VIRGINIA

By: _____
Calvin L. Coleman, Jr.
Mayor

Attest:

_____
Kimberly D. Allen
Town Clerk

Approved As To Form:

_____
Robert W. Bendall
Town Attorney

COUNTY OF CULPEPER, VIRGINIA

By: _____
Brad C. Rosenberger
Chairman, Board of Supervisors

Attest:

_____
Frank T. Bossio
County Clerk

Approved As To Form:

_____
Roy B. Thorpe, Jr.
County Attorney

VIRGINIA WATER QUALITY IMPROVEMENT FUND

POINT SOURCE GRANT AND
OPERATION AND MAINTENANCE AGREEMENT

Grantee Town of Culpeper
Grant: #440-S-07-18

CONTRACT MODIFICATION NO. 2

A. Delete existing Section 2., in Article II, Scope of Project, and substitute in its place the following:

2. The Grantee will cause the Project to be designed, constructed and placed in operation as described in Exhibit A to this Agreement to meet effluent concentration limitations of 4.0 mg/l for total nitrogen, and 0.30 mg/l for total phosphorus, both on an annual average basis.

B. Delete existing Section 4.0, in Article IV, Compensation, and substitute in its place the following:

4.0. Grant Amount. The total grant award from the Fund under this Agreement is $5,632,226 and represents the Commonwealth's forty-five percent (45%) share of the eligible Project Costs. Any material changes made to the Project after execution of this Agreement, which alter the Project Costs, will be submitted to the Department for review of grant eligibility. The amount of the grant award set forth herein may be modified from time to time by agreement of the parties to reflect changes to the Project and/or grant eligible Project Costs.

C. Delete existing Section 5.0, in Article V, Performance, and substitute in its place the following:

5.0 The Grantee's Facility shall meet a total nitrogen effluent concentration limitation of 4.0 mg/l, and a total phosphorus effluent concentration limitation of 0.30 mg/l, both on an annual average basis, except as provided in paragraph 5.1 and Article VIII of this Agreement.

D. Delete the first paragraph of existing Section 8.2, in Article VIII, Material Breach, and substitute in its place the following:

8.2. Monetary Assessments for Breach. In no event shall total Monetary Assessments pursuant to this Agreement exceed (i) $451,700 annually or (ii) $9,034,000 during the life of this Agreement. Monetary Assessments will be paid into the State Treasury and credited to the Fund. The Director's right to collect Monetary Assessments does not affect in any way the Director's right to secure specific performance of this Agreement using such other legal remedies as may otherwise be available. Within ninety (90) days of receipt of written demand from the Director, the Grantee shall pay the following Monetary Assessments for the corresponding material breaches of this Agreement unless the Grantee asserts a defense pursuant to the requirements of Section 8.3 herein.

E. Delete existing Exhibit F, Formula for Calculating Monetary Assessment for Exceedance of Numerical Nitrogen and Phosphorus Concentrations, and substitute in its place the following two pages:

EXHIBIT F

FORMULA FOR CALCULATING MONETARY ASSESSMENT FOR EXCEEDANCE OF NUMERICAL NITROGEN CONCENTRATIONS

Grantee: Town of Culpeper
Grant: #440-S-07-18

Section 1: Nitrogen Exceedances

$$CN = (TNe/TNr) \times AnPay \times PerGrant$$

where:

CN	=	Assessment for Nitrogen Exceedance.
TNe	=	Exceedance in tenths of a milligram per liter.
TNr	=	Expected nitrogen removal (difference between "pre-nutrient removal" annual average concentration and 4.0 mg/l limitation) in tenths of a milligram per liter.
AnPa	=	Annual Payment on grant; assumes principal payments amortized over 20 years and an interest rate of 5 percent. Using these assumed values leads to a "cost recovery factor" of 0.0802. The "cost recovery factor" times the grant amount yields the Annual Payment amount.
PerGrant	=	Percentage of grant received by year of exceedance.

Values used for Grant #440-S-07-18

:

Pre-Nutrient Removal TN Concentration	= 9.73 mg/l
Effluent TN Concentration Limitation	= 4.0 mg/l
Total Grant Amount for TN Removal	= $4,495,067
Useful Service Life	= 20 years
Interest Rate	= 5 percent

Calculated (assumes grant paid 100%):

Expected Removal (TNr)	= 5.73 mg/l
AnPay	= $360,500
CN	= $6,290 (for each 0.1 mg/l TN exceedance)

EXHIBIT F

FORMULA FOR CALCULATING MONETARY ASSESSMENT
FOR EXCEEDANCE OF
NUMERICAL PHOSPHORUS CONCENTRATIONS

Grantee: Town of Culpeper
Grant: #440-S-07-18

Section 2: Phosphorus Exceedances

$$CP = (TPe/TPr) \times AnPay \times PerGrant$$

where:

CP	=	Assessment for Phosphorus Exceedance.
TPe	=	Exceedance in tenths of a milligram per liter.
TPr	=	Expected phosphorus removal (difference between "pre-nutrient removal" annual average concentration and 0.30 mg/l limitation) in tenths of a milligram per liter.
AnPay	=	Annual Payment on grant; assumes principal payments amortized over 20 years and an interest rate of 5 percent. Using these assumed values leads to a "cost recovery factor" of 0.0802. The "cost recovery factor" times the grant amount yields the Annual Payment amount.
PerGrant	=	Percentage of grant received by year of exceedance.

Values used for Grant #440-S-07-18:

Pre-Nutrient Removal TP Concentration	= 1.26 mg/l
Effluent TP Concentration Limitation	= 0.30 mg/l
Total Grant Amount for TP Removal	= $1,137,159
Useful Service Life	= 20 years
Interest Rate	= 5 percent

Calculated (assumes grant paid 100%):

Expected Removal (TPr)	= 0.96 mg/l
AnPay	= $91,200
CP	= $9,500 (for each 0.1 mg/l TP exceedance)

The contracting parties have caused the Agreement to be modified by the following duly authorized signatures:

GRANTEE	**GRANTOR**
Town of Culpeper	Department of Environmental Quality
BY: _____	BY: _____
TITLE: Town Manager	TITLE: _____
DATE: 4/14/11	DATE: _____

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

April 22, 2010

Mr. Chris Hively, P. E.
Town of Culpeper
Director of Environmental Services
400 South Main Street
Culpeper, VA 22701

Culpeper County
Town of Culpeper STW

Dear Mr. Hively:

Enclosed is the Certificate to Operate (CTO) for the above mentioned facility. This action is in accordance with the Virginia *Sewage Collection and Treatment Regulations.*

If you have any questions regarding the CTO, please feel free to contact this office.

Sincerely,

J. S. Desai, P. E.
CBP/Wastewater Engineering
Northern Regional Office

Attachment 4

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
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Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

CERTIFICATE TO OPERATE

Owner: Town of Culpeper

Facility/System Name: Culpeper STW

VPDES Permit Number: VA0061590

Description of the Facility/System: Flow equalization, five-stage "Bardenpho" activated sludge process, secondary clarifies, deep bed denitrification filters, Ultraviolet (UV) disinfection, gravity belt thickener, alum addition for phosphorous removal, methanol (carbon source) addition for denitrification and related appurtenances.

Authorization to Operate: The owner's consulting engineer has certified in writing that the installation has been constructed as per the approved plans and specifications. Therefore, the owner has authorization to operate the facility, with the following conditions:

1. A revised Operation and Maintenance Manual for the Town of Culpeper STW must be submitted to the Northern Regional Office for evaluation and approval in accordance with the VPDES Permit for this facility.

2. The Flow Equalization Basin must be provided with appropriate aeration if odor complaints persist from facility employees, visitors, or general residents of the Town of Culpeper or Culpeper County.

3. If BOD_5 values in effluent exceed the permitted values, means for automatically pacing the carbon source feed to the incoming nitrate concentration must be provided at this facility.

ISSUANCE:

J. S. Desai, P. E.
CBP/Wastewater Engineering

Date: April 22, 2010

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Culpeper County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2011 to 5:00 p.m. on XXX, 2011

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Town of Culpeper, 400 South Main Street, Culpeper, VA 22701, VA0061590

PROJECT DESCRIPTION: Town of Culpeper has applied for a modification of a permit for the public Town of Culpeper WPCF. The applicant proposes to release treated sewage wastewaters from residential/industrial areas at a rate of 6.0 million gallons per day into a water body. The sludge will be disposed by land application by a contract hauler on approved fields or disposed of at the landfill. The facility proposes to release the treated sewage in the Mountain Run in Culpeper County in the Rappahannock River watershed. A watershed is the land area drained by a river and its incoming streams. The permit modification will remove the 4.0 MGD effluent limitations, increase the Total Nitrogen annual effluent concentration to 4.0 mg/L, remove the groundwater monitoring special condition, maintain the Total Phosphorus annual effluent concentration at 0.30 mg/L, update Part II, A.4. of the permit, and correct typographical errors within the permit.

This facility is subject to the requirements of 9 VAC 25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Joan C.Crowther
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3925 E-mail: joan.crowther@deq.virginia.gov Fax: (703) 583-3821

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Town of Culpeper Wastewater Treatment Plant
NPDES Permit Number:	VA0061590
Permit Writer Name:	Joan C. Crowther
Date:	September 19, 2011

Major [x] **Minor** [ ] **Industrial** [ ] **Municipal** [x]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?			x
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	x		
3. Copy of Public Notice?	x		
4. Complete Fact Sheet?	x		
5. A Priority Pollutant Screening to determine parameters of concern?	x		
6. A Reasonable Potential analysis showing calculated WQBELs?	x		
7. Dissolved Oxygen calculations?	x		
8. Whole Effluent Toxicity Test summary and analysis?	x		
9. Permit Rating Sheet for new or modified industrial facilities?			x

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		x	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	x		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	x		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?	x		
5. Has there been any change in streamflow characteristics since the last permit was developed?		x	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		x	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	x		
8. Does the facility discharge to a 303(d) listed water?	x		
a. Has a TMDL been developed and approved by EPA for the impaired water?	x		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			x
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	x		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?	x		
10. Does the permit authorize discharges of storm water?		x	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		x	
12. Are there any production-based, technology-based effluent limits in the permit?		x	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		x	
14. Are any WQBELs based on an interpretation of narrative criteria?		x	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		x	
16. Does the permit contain a compliance schedule for any limit or condition?		x	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		x	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	x		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		xx	
20. Have previous permit, application, and fact sheet been examined?	x		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs

(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	**Yes**	**No**	**N/A**
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	x		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	x		

II.B. Effluent Limits – General Elements	**Yes**	**No**	**N/A**
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	x		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?	x		

II.C. Technology-Based Effluent Limits (POTWs)	**Yes**	**No**	**N/A**
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	x		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	x		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			x
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	x		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	x		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		x	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			x

II.D. Water Quality-Based Effluent Limits	**Yes**	**No**	**N/A**
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	x		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?	x		
3. Does the fact sheet provide effluent characteristics for each outfall?	x		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	x		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	x		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	x		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	x		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?		x	
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	x		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	x		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	x		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	x		
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	x		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	x		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			x
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	x		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?			x
4. Does the permit require testing for Whole Effluent Toxicity?	x		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	x		
2. Does the permit include appropriate storm water program requirements?			x

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?	x		
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	x		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		x	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		x	
a. Does the permit require implementation of the "Nine Minimum Controls"?			x
b. Does the permit require development and implementation of a "Long Term Control Plan"?			x
c. Does the permit require monitoring and reporting for CSO events?			x
7. Does the permit include appropriate Pretreatment Program requirements?	x		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	x		

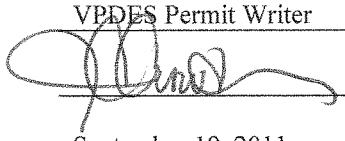
List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance
	Monitoring and records	Transfers
Duty to mitigate	Signatory requirement	Monitoring reports
Proper O & M	Bypass	Compliance schedules
Permit actions	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	x		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Joan C. Crowther
Title	VPDES Permit Writer
Signature	
Date	September 19, 2011